

Supported Hardware

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**Note**

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- Enter the **show power** command to display current system power usage.
 - Flash Memory Device Summary
 - **bootflash:** on the RP of all supervisor engines.
 - **sup-bootdisk:** on the SP of these supervisor engines:
 - Supervisor Engine 720-10GE.
 - Supervisor Engine 720 with a [CompactFlash adapter](#) and CompactFlash card sold by Cisco Systems, Inc., for use in Supervisor Engine 720-10GE.
 - Supervisor Engine 32.
 - **sup-bootflash:** on the SP of these supervisor engines:
 - Supervisor Engine 720 without a CompactFlash adapter and CompactFlash card sold by Cisco Systems, Inc., for use in Supervisor Engine 720.
 - ME 6500.
 - **disk0:** on these supervisor engines:
 - Supervisor Engine 720-10GE.
 - Supervisor Engine 720.
 - Supervisor Engine 32.
 - ME 6500.
 - **disk1:** on a Supervisor Engine 720.
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Supervisor Engines

- [Supervisor Engine 720-10GE \(CAT6000-VS-S720-10G/MSFC3\)](#), page 16
- [Supervisor Engine 720 \(CAT6000-SUP720/MSFC3\)](#), page 18
- [Supervisor Engine 32 \(CAT6000-SUP32/MSFC2A\)](#), page 22
- [Cisco ME 6500 Series Ethernet Switches \(ME6524\)](#), page 24

**Note**

For information about DRAM requirements on all supervisor engines, see this publication:
http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps708/qa_c67_457347.html

Supervisor Engine 720-10GE (CAT6000-VS-S720-10G/MSFC3)

- [Supervisor Engine 720-10GE Common Features](#), page 17
- [Supervisor Engine 720-10GE with PFC3C and PFC3CXL](#), page 18
- [Supervisor Engine 720-10GE Restrictions](#), page 18

Supervisor Engine 720-10GE Common Features

- Switch processor (SP):
 - Internal 1-GB CompactFlash card (**sup-bootdisk:**).
 - 1-GB [DRAM](#).
- Route processor (RP):
 - Internal 64-MB bootflash.
 - 1-GB [DRAM](#).
- One of these:
 - Policy Feature Card 3CXL (PFC3CXL).
 - Policy Feature Card 3C (PFC3C).
 - See the [“Policy Feature Cards” section on page 24](#).
- Integrated 720-Gbps Switch Fabric.
- One external slot:
 - **disk0:**
 - For CompactFlash Type II flash PC cards sold by Cisco Systems, Inc., for use in Supervisor Engine 720-10GE.
- Console port—EIA/TIA-232 (RS-232) port.
- Ports 1 and 2:
 - QoS architecture: **2q4t/1p3q4t**
 - Support for [Gigabit Ethernet SFP Modules](#)
- Port 3:
 - 10/100/1000 Mbps RJ-45
 - QoS architecture: **2q4t/1p3q4t**
- Ports 4 and 5:
 - Support for 10-Gigabit Ethernet [X2](#) transceivers
 - QoS architecture: **2q4t/1p3q4t** or **8q4t/1p7q4t**



Note

The 1-Gigabit Ethernet ports and the 10-Gigabit Ethernet ports have the same QoS port architecture (**2q4t/1p3q4t**) unless you disable the 1-Gigabit Ethernet ports with the **mls qos 10g-only** global configuration command, which is required to configure DSCP-based queueing. With the 1-Gigabit Ethernet ports disabled, the QoS port architecture of the 10-Gigabit Ethernet ports is **8q4t/1p7q4t**.

- One port group: ports 1 through 5.
- Two Universal Serial Bus (USB) 2.0 ports (not currently enabled)

Supervisor Engine 720-10GE with PFC3C and PFC3CXL

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
VS-S720-10G-3CXL	Supervisor Engine 720-10GE with PFC3CXL	12.2(33)SXH ¹
VS-S720-10G-3C	Supervisor Engine 720-10GE with PFC3C	12.2(33)SXH ¹

1. If there are no DFC-equipped modules installed, certain configurations require Release 12.2(33)SXH1 or later and impose configuration restrictions that are described in [CSCsj95733](#).

Supervisor Engine 720-10GE Restrictions

- In RPR redundancy mode, the ports on a Supervisor Engine 720-10GE in standby mode are disabled.
- Supervisor Engine 720-10GE requires a high-capacity fan tray (see the “[Fan Trays](#)” section on [page 100](#)). All E-series chassis have a high-capacity fan tray.
- There are no memory-only upgrade options for the Supervisor Engine 720-10GE.

Supervisor Engine 720 (CAT6000-SUP720/MSFC3)

- [Supervisor Engine 720 Common Features](#), page 18
- [Supervisor Engine 720 with PFC3BXL](#), page 19
- [Supervisor Engine 720 with PFC3B](#), page 20
- [Supervisor Engine 720 with PFC3A](#), page 21

Supervisor Engine 720 Common Features

- Integrated 720-Gbps Switch Fabric
- Internal 64-MB bootflash device (**sup-bootflash:**) or CompactFlash card (**sup-bootdisk:**), [512 MB or larger](#).
 - As an upgrade, WS-CF-UPG=
 - See this publication: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_17277.html
- Two external slots (disk0: and disk1:) for CompactFlash Type II flash PC cards sold by Cisco Systems, Inc., for use in Supervisor Engine 720.



Note

Some Supervisor Engine 720 Release 12.2SX images are larger than the bootflash device and must be stored on a CompactFlash card (**sup-bootdisk:** or disk0: or disk1:).

- Two Ethernet uplink ports:
 - 512-KB packet buffer per port
 - Port 1—Gigabit Interface Converter (GBIC)
 - Port 2—Configurable as either:
 - Gigabit Interface Converter (GBIC)
 - 10/100/1000 Mbps RJ-45
- QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**
- Port grouping:
 - Number of ports: 2
 - Number of port groups: 1
 - Port ranges per port group: 1–2
- Supervisor Engine 720 requires a high-capacity fan tray (see the “Fan Trays” section on page 100). All E-series chassis have a high-capacity fan tray.

Supervisor Engine 720 with PFC3BXL



Note

If you install WS-SUP720-3BXL=, upgrade the memory on any DFC3-equipped switching modules. See this document for DFC3 memory upgrades:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SUP720-3BXL	Supervisor Engine 720 with PFC3BXL: • Switch processor (SP): – Internal 64-MB bootflash device (sup-bootflash:) or internal CompactFlash card (sup-bootdisk:) – 1-GB or larger DRAM • Route processor (RP): – 1-GB or larger DRAM – 64-MB bootflash • Policy Feature Card 3BXL (PFC3BXL)—See the “Policy Feature Cards” section on page 24.	12.2(17b)SXA

Supervisor Engine 720 with PFC3B

**Note**

- See this document for DFC3 memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Use **WS-F6K-PFC3BXL=** to upgrade a WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3.
 - If you install WS-F6K-PFC3BXL=, upgrade the memory on any DFC3-equipped switching modules.
 - See this publication for more information about WS-F6K-PFC3BXL=:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SUP720-3B	Supervisor Engine 720 with PFC3B: • Switch processor (SP): – Internal 64-MB bootflash device (sup-bootflash:) or internal CompactFlash card (sup-bootdisk:) – 512-MB or larger DRAM • Route processor (RP): – 64-MB bootflash – 512-MB or larger DRAM • Policy Feature Card 3B (PFC3B)—See the “Policy Feature Cards” section on page 24	12.2(17d)SXB1

Supervisor Engine 720 with PFC3A



Note

- See this document for DFC3 memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Use **WS-F6K-PFC3B=** to upgrade a WS-SUP720 with a PFC3B. Use **WS-F6K-PFC3BXL=** to upgrade a WS-SUP720 with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3.
 - If you install WS-F6K-PFC3BXL=, upgrade the memory on any DFC3-equipped switching modules.
 - See this publication for more information about WS-F6K-PFC3BXL=:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html
- Except with WS-F6K-PFC3B= or WS-F6K-PFC3BXL=, do not upgrade the memory on the switch processor or the route processor on a WS-SUP720.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SUP720	Supervisor Engine 720 with PFC3A: • Switch processor – Internal 64-MB bootflash device (sup-bootflash:) or internal 512 MB CompactFlash card (sup-bootdisk:) – 512-MB DRAM • Route processor: – 64-MB bootflash – 512-MB DRAM • Policy Feature Card 3A (PFC3A; see the “Policy Feature Cards” section on page 24)	12.2(14)SX

Supervisor Engine 32 (CAT6000-SUP32/MSFC2A)

- [Supervisor Engine 32 Restrictions, page 22](#)
- [Supervisor Engine 32 Features, page 23](#)

Supervisor Engine 32 Restrictions

- Supervisor Engine 32 requires a high-capacity fan tray (see the [“Fan Trays” section on page 100](#)). All E-series chassis have a high-capacity fan tray.
- In some chassis, Supervisor Engine 32 requires a high-capacity power supply (see the [“Power Supplies” section on page 100](#)).
- Supervisor Engine 32 cannot support this hardware:
 - DFCs (switching modules with DFCs do not power up with a Supervisor Engine 32)
 - WS-X6700 series switching modules
 - WS-X6816-GBIC switching modules
 - The WS-SVC-WISM-1-K9 Wireless Services Module (WiSM)
 - 7600-SIP-600 SPA Interface Processor-600 and SPAs supported only in 7600-SIP-600.
- Supervisor Engine 32 does not support this hardware:
 - WS-F6K-PFC3A Policy Feature Card 3A (PFC3A)
 - WS-F6K-PFC3BXL Policy Feature Card 3BXL (PFC3BXL)
 - CISCO7603 3-slot chassis
- Supervisor Engine 32 cannot support these software features and commands:
 - Egress multicast replication
 - Multicast replication mode detection
 - All fabric configuration commands

Supervisor Engine 32 Features


Note

- See this publication for Supervisor Engine 32 hardware information:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Module_Installation/Sup_Eng_Guide/supe_gd.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SUP32-10GE-3B WS-SUP32-GE-3B	Supervisor Engine 32: - One 10/100/1000 Mbps RJ-45 port - WS-SUP32-10GE - Two 10-Gigabit Ethernet ports - Requires XENPAKs - WS-SUP32-GE - Eight SFP ports - Requires Gigabit or 10/100/1000 Mbps Ethernet SFPs - QoS port architecture (Rx/Tx): 2q8t/1p3q8t - One external slot (disk0:) for CompactFlash Type II flash PC cards sold by Cisco Systems, Inc., for use in Supervisor Engine 32 - Switch processor - Internal 256 MB CompactFlash card (sup-bootdisk:) 512-MB or more DRAM (some images require more DRAM) - Route processor: - Internal 64-MB bootflash 512-MB or more DRAM (some images require more DRAM) - Policy Feature Card 3B (PFC3B)—See the “Policy Feature Cards” section on page 24) - Two Universal Serial Bus (USB) 2.0 ports (not currently enabled)	12.2(18)SXF

Cisco ME 6500 Series Ethernet Switches (ME6524)

Product ID (append “=” for spares)	Product Description	Minimum Software Version
ME-C6524GS-8S	Cisco ME 6500 Series Ethernet switches: - Switch processor (SP): 256-MB DRAM 128-MB bootflash - Policy Feature Card 3C (PFC3C): - Supports a theoretical maximum of 96 K MAC addresses (64 K MAC addresses recommended maximum). - The PFC3C operates in PFC3C mode. Enter the show platform hardware pfc mode command to display the PFC3 mode. - Route processor (RP)—Multilayer Switch Feature Card 2A (MSFC2A): 512-MB DRAM 64-MB bootflash - Fan tray: FAN-C6524 - Power supplies: PWR-400W-DC 64 chassis MAC addresses - Eight Gigabit Ethernet SFP ports: - Requires Gigabit Ethernet SFPs 1 port group: ports 25–32 - QoS port architecture (Rx/Tx): 2q8t/1p3q8t - ME-C6524GS-8S: 24 Gigabit Ethernet SFP ports (requires Gigabit Ethernet SFPs) 4 port groups: ports 1–6, 7–12, 13–18, 19–24 - QoS port architecture (Rx/Tx): 1q2t/1p3q8t - ME-C6524GT-8S: 24 10/100/1000 Mbps RJ-45 Ethernet ports 4 port groups: ports 1–6, 7–12, 13–18, 19–24 - QoS port architecture (Rx/Tx): 1q2t/1p3q8t	12.2(33)SXH
ME-C6524GT-8S		Not supported in 12.2(33)SXJ and later releases.

Note See this publication for Cisco ME 6500 Series Ethernet switch hardware information:

http://www.cisco.com/en/US/products/ps6845/prod_installation_guides_list.html

Policy Feature Cards

- [Policy Feature Card Guidelines and Restrictions, page 25](#)
- [Policy Feature Card 3CXL, page 27](#)

- [Policy Feature Card 3C, page 28](#)
- [Policy Feature Card 3BXL, page 28](#)
- [Policy Feature Card 3B, page 28](#)
- [Policy Feature Card 3A, page 29](#)

Policy Feature Card Guidelines and Restrictions

- The PFC3C supports a theoretical maximum of 96 K MAC addresses (64 K MAC addresses recommended maximum).
- The PFC3A, PFC3B, and PFC3BXL support a theoretical maximum of 64 K MAC addresses (32 K MAC addresses recommended maximum).
- The PFC3 partitions the hardware FIB table to route IPv4 unicast, IPv4 multicast, MPLS, and IPv6 unicast and multicast traffic in hardware. Traffic for routes that do not have entries in the hardware FIB table are processed by the route processor in software.

The defaults for [XL mode](#) are:

- IPv4 unicast and MPLS—512,000 routes
- IPv4 multicast and IPv6 unicast and multicast—256,000 routes

The defaults for [Non-XL mode](#) are:

- IPv4 unicast and MPLS—192,000 routes
- IPv4 multicast and IPv6 unicast and multicast—32,000 routes



Note The size of the global internet routing table plus any local routes might exceed the non-XL mode default partition sizes.

These are the theoretical maximum numbers of routes for the supported protocols (the maximums are not supported simultaneously):

- [XL mode](#):
 - IPv4 and MPLS—Up to 1,007,000 routes
 - IPv4 multicast and IPv6 unicast and multicast—Up to 503,000 routes
- [Non-XL mode](#):
 - IPv4 and MPLS—Up to 239,000 routes
 - IPv4 multicast and IPv6 unicast and multicast—Up to 119,000 routes

Enter the [mls cef maximum-routes](#) command to repartition the hardware FIB table. IPv4 unicast and MPLS require one hardware FIB table entry per route. IPv4 multicast and IPv6 unicast and multicast require two hardware FIB table entries per route. Changing the partition for one protocol makes corresponding changes in the partitions of the other protocols. You must enter the **reload** command to put configuration changes made with the **mls cef maximum-routes** command into effect.



Note With a non-XL-mode system, if your requirements cannot be met by repartitioning the hardware FIB table, upgrade components as necessary to operate in XL mode.

- You cannot use one type of PFC3 on one supervisor engine and a different type on the other supervisor engine for redundancy. You must use identical policy feature cards for redundancy.

- PFC3A—These restrictions apply to a configuration with a PFC3A and these DFCs:
 - PFC3A and DFC3A—No restrictions (PFC3A mode; does not support virtual switch mode).
 - PFC3A and DFC3B—The PFC3A restricts DFC3B functionality: the DFC3B functions as a DFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3A and DFC3BXL—The PFC3A restricts DFC3BXL functionality: the DFC3BXL functions as a DFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3A and DFC3C—The PFC3A restricts DFC3C functionality: the DFC3C functions as a DFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3A and DFC3CXL—The PFC3A restricts DFC3CXL functionality: the DFC3CXL functions as a DFC3A (PFC3A mode; does not support virtual switch mode).
- PFC3B—These restrictions apply to a configuration with a PFC3B and these DFCs:
 - PFC3B and DFC3A—PFC3B functionality is restricted by the DFC3A: after a reload with a DFC3A-equipped module installed, the PFC3B functions as a PFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3B and DFC3B—No restrictions (PFC3B mode; does not support virtual switch mode).
 - PFC3B and DFC3BXL—The PFC3B restricts DFC3BXL functionality: after a reload with a DFC3BXL-equipped module installed, the DFC3BXL functions as a DFC3B (PFC3B mode; does not support virtual switch mode).
 - PFC3B and DFC3C—The PFC3B restricts DFC3C functionality: the DFC3C functions as a DFC3B (PFC3B mode; does not support virtual switch mode).
 - PFC3B and DFC3CXL—The PFC3B restricts DFC3CXL functionality: the DFC3CXL functions as a DFC3B (PFC3B mode; does not support virtual switch mode).
- PFC3BXL—These restrictions apply to a configuration with a PFC3BXL and these DFCs:
 - PFC3BXL and DFC3A—PFC3BXL functionality is restricted by the DFC3A: after a reload with a DFC3A-equipped module installed, the PFC3BXL functions as a PFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3BXL and DFC3B—PFC3BXL functionality is restricted by the DFC3B: after a reload with a DFC3B-equipped module installed, the PFC3BXL functions as a PFC3B (PFC3B mode; does not support virtual switch mode).
 - PFC3BXL and DFC3BXL—No restrictions (PFC3BXL mode; does not support virtual switch mode).
 - PFC3BXL and DFC3C—Each restricts the functionality of the other: the PFC3BXL functions as a PFC3B and the DFC3C functions as a DFC3B (PFC3B mode; does not support virtual switch mode).
 - PFC3BXL and DFC3CXL—The PFC3BXL restricts DFC3CXL functionality: the DFC3CXL functions as a DFC3BXL (PFC3BXL mode; does not support virtual switch mode).
- PFC3C—These restrictions apply to a configuration with a PFC3C and these DFCs:
 - PFC3C and DFC3A—PFC3C functionality is restricted by the DFC3A: after a reload with a DFC3A-equipped module installed, the PFC3C functions as a PFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3C and DFC3B—PFC3C functionality is restricted by the DFC3B: after a reload with a DFC3B-equipped module installed, the PFC3C functions as a PFC3B (PFC3B mode; does not support virtual switch mode).

- PFC3C and DFC3BXL—PFC3C functionality is restricted by the DFC3BXL: after a reload with a DFC3BXL-equipped module installed, the PFC3C functions as a PFC3BXL (PFC3BXL mode; does not support virtual switch mode).
- PFC3C and DFC3C—No restrictions (PFC3C mode).
- PFC3C and DFC3CXL—The PFC3C restricts DFC3CXL functionality: the DFC3CXL functions as a DFC3C (PFC3C mode).
- PFC3CXL—These restrictions apply to a configuration with a PFC3CXL and these DFCs:
 - PFC3CXL and DFC3A—PFC3CXL functionality is restricted by the DFC3A: after a reload with a DFC3A-equipped module installed, the PFC3CXL functions as a PFC3A (PFC3A mode; does not support virtual switch mode).
 - PFC3CXL and DFC3B—PFC3CXL functionality is restricted by the DFC3B: after a reload with a DFC3B-equipped module installed, the PFC3CXL functions as a PFC3B (PFC3B mode; does not support virtual switch mode).
 - PFC3CXL and DFC3BXL—PFC3CXL functionality is restricted by the DFC3BXL: after a reload with a DFC3BXL-equipped module installed, the PFC3CXL functions as a PFC3BXL (PFC3BXL mode; does not support virtual switch mode).
 - PFC3CXL and DFC3C—PFC3CXL functionality is restricted by the DFC3C: after a reload with a DFC3C-equipped module installed, the PFC3CXL functions as a PFC3C (PFC3C mode).
 - PFC3CXL and DFC3CXL—No restrictions (PFC3CXL mode).
- Switching modules that you install after bootup that are equipped with a DFC that imposes a more restricted PFC mode than the current PFC mode remain powered down.
- You must reboot to use a switching module equipped with a DFC that imposes a more restricted PFC mode than the current PFC mode.
- Enter the **show platform hardware pfc mode** command to display the PFC mode.

Policy Feature Card 3CXL



Note

Use VS-F6K-PFC3CXL= to upgrade a [VS-S720-10G-3C](#) with a PFC3CXL. See this publication for more information:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
VS-F6K-PFC3CXL	Policy Feature Card 3CXL (PFC3CXL)	
	Supported only with Supervisor Engine 720-10GE	12.2(33)SXH

Policy Feature Card 3C

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
VS-F6K-PFC3C ME-C6524-PFC3C	Policy Feature Card 3C (PFC3C)	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Cisco ME 6500 Series Ethernet switches	12.2(33)SXH

Policy Feature Card 3BXL



Note

Use WS-F6K-PFC3BXL= to upgrade a [WS-SUP720](#) or [WS-SUP720-3B](#) with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. See this publication for more information:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-PFC3BXL	Policy Feature Card 3BXL (PFC3BXL)	
	Supported only with Supervisor Engine 720	12.2(17b)SXA

Policy Feature Card 3B



Note

Use [WS-F6K-PFC3B=](#) to upgrade a [WS-SUP720](#) with a PFC3B. See this publication for more information:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-PFC3B	Policy Feature Card 3B (PFC3B)	
	With Supervisor Engine 720	12.2(17d)SXB1
	With Supervisor Engine 32	12.2(18)SXF

Policy Feature Card 3A

**Note**

WS-F6K-PFC3A is available only on [WS-SUP720](#). It is not orderable.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-PFC3A	Policy Feature Card 3A (PFC3A)	
	Supported only with Supervisor Engine 720	12.2(14)SX

Distributed and Centralized Forwarding Cards

- [Distributed Forwarding Card 3CXL, page 30](#)
- [Distributed Forwarding Card 3C, page 31](#)
- [Distributed Forwarding Card 3BXL, page 32](#)
- [Distributed Forwarding Card 3B, page 34](#)
- [Distributed Forwarding Card 3A, page 36](#)
- [Centralized Forwarding Card \(WS-F6700-CFC\), page 38](#)



Note

See the “[Policy Feature Cards](#)” section on page 24 for Policy Feature Cards (PFC) and Distributed Forwarding Card (DFC) restrictions.

Distributed Forwarding Card 3CXL



Note

- WS-F6700-DFC3CXL uses memory that is installed on the switching module.
- See this publication for information about WS-F6700-DFC3CXL upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_15893.html
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Version
WS-F6700-DFC3CXL	Distributed Forwarding Card 3CXL (DFC3CXL) for use on CEF720 modules	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 and all WS-X6700 series modules	12.2(33)SXH
	With Supervisor Engine 720 and WS-X6708-10GE	12.2(18)SXF5

Distributed Forwarding Card 3C



Note

- WS-F6700-DFC3C uses memory that is installed on the switching module.
- See this publication for information about WS-F6700-DFC3C upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_15893.html
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append "=" for spares)	Product Description	Minimum Software Version
WS-F6700-DFC3C	Distributed Forwarding Card 3C (DFC3C) for use on CEF720 modules	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 and all WS-X6700 series modules	12.2(33)SXH
	With Supervisor Engine 720 and WS-X6708-10GE	12.2(18)SXF5

Distributed Forwarding Card 3BXL

- [WS-F6700-DFC3BXL, page 32](#)
- [WS-F6K-DFC3BXL, page 33](#)

WS-F6700-DFC3BXL



Note

- WS-F6700-DFC3BXL uses memory that is installed on the switching module.
- See this publication for information about WS-F6700-DFC3BXL upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_15893.html
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6700-DFC3BXL	Distributed Forwarding Card 3BXL (DFC3BXL) for use on CEF720 modules	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(17d)SXB6

WS-F6K-DFC3BXL

**Note**

- See this publication for information about WS-F6K-DFC3BXL memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Supervisor Engine 720 supports a WS-F6K-DFC3BXL on these [WS-X6516-GBIC](#) switching module hardware revisions:
 - Lower than 5.0
 - 5.5 and higher
- Use with Release 12.2(33)SXH or later requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html
- Supervisor Engine 720 does not support a DFC3 on [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4 do not power up.
- With a Supervisor Engine 720 but without a DFC3, [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4 operate in bus mode.
- See external field notice 24494 for more information about Supervisor Engine 720 and a DFC3 on [WS-X6516-GBIC](#) switching modules:
<http://www.cisco.com/en/US/ts/fn/200/fn24494.html>

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
WS-F6K-DFC3BXL	Distributed Forwarding Card 3BXL (DFC3BXL) for use on dCEF256 and CEF256 modules	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXD3

Distributed Forwarding Card 3B

- [WS-F6700-DFC3B, page 34](#)
- [WS-F6K-DFC3B, page 35](#)

WS-F6700-DFC3B



Note

- WS-F6700-DFC3B uses memory that is installed on the switching module.
- See this publication for information about WS-F6700-DFC3B upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_15893.html
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6700-DFC3B	Distributed Forwarding Card 3B (DFC3B) for use on CEF720 modules	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(17d)SXB6

WS-F6K-DFC3B

**Note**

- See this publication for information about WS-F6K-DFC3B memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Use with Release 12.2(33)SXH or later requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html
- Supervisor Engine 720 supports a WS-F6K-DFC3B on these [WS-X6516-GBIC](#) switching module hardware revisions:
 - Lower than 5.0
 - 5.5 and higher
- Supervisor Engine 720 does not support a DFC3 on [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4 do not power up.
- With a Supervisor Engine 720 but without a DFC3, [WS-X6516-GBIC](#) switching module hardware revisions 5.0 through 5.4 operate in bus mode.
- See external field notice 24494 for more information about Supervisor Engine 720 and a DFC3 on [WS-X6516-GBIC](#) switching modules:
<http://www.cisco.com/en/US/ts/fn/200/fn24494.html>

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-DFC3B	Distributed Forwarding Card 3B (DFC3B) for use on dCEF256 and CEF256 modules	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXD3

Distributed Forwarding Card 3A

- [WS-F6700-DFC3A, page 36](#)
- [WS-F6K-DFC3A, page 37](#)

WS-F6700-DFC3A



Note

- WS-F6700-DFC3A uses memory that is installed on the switching module.
- See this publication for information about WS-F6700-DFC3A memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6700-DFC3A	Distributed Forwarding Card 3A (DFC3A) for use on CEF720 modules	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX

WS-F6K-DFC3A

**Note**

- Not supported in virtual switch mode.
- See this publication for information about WS-F6K-DFC3A memory upgrades:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12409.html
- Use with Release 12.2(33)SXH or later requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html
- Supervisor Engine 720 supports a WS-F6K-DFC3A on these [WS-X6516-GBIC](#) switching module hardware revisions:
 - Lower than 5.0
 - 5.5 and higher
- Supervisor Engine 720 does not support a DFC3 on WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 do not power up.
- With a Supervisor Engine 720 but without a DFC3, WS-X6516-GBIC switching module hardware revisions 5.0 through 5.4 operate in bus mode.
- See external field notice 24494 for more information about Supervisor Engine 720 and a DFC3 on WS-X6516-GBIC switching modules:
<http://www.cisco.com/en/US/ts/fn/200/fn24494.html>

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-DFC3A	Distributed Forwarding Card 3A (DFC3A) for use on dCEF256 and CEF256 modules	
	Supported only with Supervisor Engine 720	12.2(14)SX

Centralized Forwarding Card (WS-F6700-CFC)



Note

- There are no memory upgrade options for WS-F6700-CFC.
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6700-CFC	Centralized Forwarding Card (CFC) for use on CEF720 modules	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX

10-Gigabit Ethernet Switching Modules

- [76-ES+XT-4TG3CXL, 76-ES+XT-4TG3C, page 39](#)
- [76-ES+XT-2TG3CXL, 76-ES+XT-2TG3C, page 40](#)
- [7600-ES+4TG3CXL, 7600-ES+4TG3C, page 40](#)
- [7600-ES+2TG3CXL, 7600-ES+2TG3C, page 41](#)
- [WS-X6716-10T 16-port 10-Gigabit Ethernet Copper Switching Module, page 42](#)
- [WS-X6716-10G 16-port 10-Gigabit Ethernet X2 Switching Module, page 44](#)
- [WS-X6708-10GE 8-port 10-Gigabit Ethernet X2 Switching Module, page 46](#)
- [WS-X6704-10GE 4-port 10-Gigabit Ethernet XENPAK Switching Module, page 48](#)
- [WS-X6502-10GE 1-port 10-Gigabit Ethernet Switching Module, page 50](#)

76-ES+XT-4TG3CXL, 76-ES+XT-4TG3C



Note

- Not supported in PFC3A mode.
- CDP is disabled by default on ES+ line card ports ([CSCtk12860](#)).

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
76-ES+XT-4TG3CXL (has DFC3CXL) 76-ES+XT-4TG3C (has DFC3C)	Four-port Ethernet Services Plus Extended Transport (ES+XT) Line Card	
	• Four 10GE ports • Dual fabric connections • Network Processors (NP): – Port 1: NP0 – Port 2: NP1 – Port 3: NP2 – Port 4: NP3 • Transceivers: LAN/WAN PHY, OTN/G.709	
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	

76-ES+XT-2TG3CXL, 76-ES+XT-2TG3C



Note

- Not supported in PFC3A mode.
- CDP is disabled by default on ES+ line card ports ([CSCtk12860](#)).

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
76-ES+XT-2TG3CXL (has DFC3CXL)	Two-port Ethernet Services Plus Extended Transport (ES+XT) Line Card • Two 10GE ports • Single fabric connection • Network Processors (NP): – Port 1: NP0 – Port 2: NP1 • Transceivers: LAN/WAN PHY, OTN/G.709	12.2(33)SXJ1
76-ES+XT-2TG3C (has DFC3C)		
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	

7600-ES+4TG3CXL, 7600-ES+4TG3C



Note

- Not supported in PFC3A mode.
- CDP is disabled by default on ES+ line card ports ([CSCtk12860](#)).

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
7600-ES+4TG3CXL (has DFC3CXL)	Four-port Ethernet Services Plus (ES) Line Card • Four 10GE ports • Dual fabric connections • Network Processors (NP): – Port 1: NP0 – Port 2: NP1 – Port 3: NP2 – Port 4: NP3	12.2(33)SXJ1
7600-ES+4TG3C (has DFC3C)		
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	

7600-ES+2TG3CXL, 7600-ES+2TG3C



Note

- Not supported in PFC3A mode.
- CDP is disabled by default on ES+ line card ports ([CSCtk12860](#)).

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
7600-ES+2TG3CXL (has DFC3CXL) 7600-ES+2TG3C (has DFC3C)	Two-port Ethernet Services Plus (ES) Line Card • Two 10GE ports • Single fabric connection • Network Processors (NP): – Port 1: NP0 – Port 2: NP1	
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	

WS-X6716-10T 16-port 10-Gigabit Ethernet Copper Switching Module

**Note**

- When not configured in [oversubscription](#) mode, supported in [virtual switch links](#) with Release 12.2(33)SXI and later releases.
- The orderable product IDs are WS-X6716-10T-3C and WS-X6716-10T-3CXL.
- The front panel is labeled WS-X6716-10T.
- Cisco IOS software commands display “WS-X6716-10T” with either WS-F6700-DFC3C or WS-F6700-DFC3CXL.
- To configure WS-X6716-10T port oversubscription, use the **hw-module slot** command.
- In these chassis, operation of a WS-X6716-10T switching module without over-temperature alarms is supported only with operating temperatures up to 40° C:
- [WS-C6513](#)
- [CISCO7613](#)
- [WS-C6509](#)
- [OSR-7609](#)
- [WS-C6506](#)
- [CISCO7606](#)
- Full NEBS-compliance requires support for operating temperatures up to 55° C, which is available in all other chassis that support WS-X6716-10T.
- All E-Series [chassis](#) provide NEBS compliance.
- Support in the [WS-C6509-NEB-A](#) chassis requires two [FAN-MOD-09](#) modules.
- Not supported in the [WS-C6503](#), [CISCO7603](#), or [WS-C6509-NEB](#) chassis.
- In a [13-slot chassis](#), supported only in slots 9 through 13 and does not power up in other slots.
- Does not support ISL encapsulation.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6716-10T-3CXL (WS-X6716-10T with WS-F6700-DFC3CXL) WS-X6716-10T-3C (WS-X6716-10T with WS-F6700-DFC3C)	16-port 10-Gigabit Ethernet copper (RJ-45) module • dCEF720 • Supports egress multicast replication • QoS port architecture (Rx/Tx): – Oversubscription mode: 1p7q2t/1p7q4t – Performance mode: 8q4t/1p7q4t – Both modes support DSCP-based queueing • Dual switch-fabric connections Fabric Channel #1: ports 1–8 Fabric Channel #2: ports 9–16 • Number of ports: 16 Number of port groups: 4 Port ranges per port group: 1–4, 5–8, 9–12, 13–16	
	With Supervisor Engine 720-10GE	12.2(33)SXI4
	With Supervisor Engine 720	(12.2(33)SXI4a or later recommended)

WS-X6716-10G 16-port 10-Gigabit Ethernet X2 Switching Module



Note

- The orderable product IDs are WS-X6716-10G-3C and WS-X6716-10G-3CXL.
- The front panel is labeled WS-X6716-10GE.
- Cisco IOS software commands display “WS-X6716-10G” with either WS-F6700-DFC3C or WS-F6700-DFC3CXL.
- To configure WS-X6716-10G port oversubscription, use the **hw-module slot** command.
- In these chassis, operation of a WS-X6716-10G switching module without over-temperature alarms is supported only with operating temperatures up to 40° C:
 - [WS-C6513](#)
 - [CISCO7613](#)
 - [WS-C6509](#)
 - [WS-C6509-NEB](#)
 - [OSR-7609](#)
 - [WS-C6506](#)
 - [CISCO7606](#)

Full NEBS-compliance requires support for operating temperatures up to 55° C, which is available in all other chassis that support WS-X6716-10G.



Note

All E-Series [chassis](#) provide NEBS compliance.

- Support in the [WS-C6509-NEB-A](#) chassis requires two [FAN-MOD-09](#) modules.
- WS-X6716-10G is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- In a [13-slot chassis](#), WS-X6716-10G is supported only in slots 9 through 13 and does not power up in other slots.
- With Release 12.2(33)SXH1, WS-X6716-10G ports in [oversubscription mode](#) do not support VACL capture. ([CSCsm46682](#))
- Not supported in [virtual switch links](#) with Releases earlier than Release 12.2(33)SXI.
- When not configured in [oversubscription](#) mode, supported in [virtual switch links](#) with Release 12.2(33)SXI and later releases.
- Does not support ISL encapsulation.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6716-10G-3CXL (WS-X6716-10G with WS-F6700-DFC3CXL) WS-X6716-10G-3C (WS-X6716-10G with WS-F6700-DFC3C)	16-port 10-Gigabit Ethernet X2 module - dCEF720 - Supports egress multicast replication - QoS port architecture (Rx/Tx): - Oversubscription mode: 1p7q2t/1p7q4t - Performance mode: 8q4t/1p7q4t - Both modes support DSCP-based queueing - Dual switch-fabric connections - Fabric Channel #1: ports 1–8 - Fabric Channel #2: ports 9–16 - Number of ports: 16 Number of port groups: 4 Port ranges per port group: 1–4, 5–8, 9–12, 13–16	
	With Supervisor Engine 720-10GE	12.2(33)SXH2
	With Supervisor Engine 720	12.2(33)SXH2

WS-X6708-10GE 8-port 10-Gigabit Ethernet X2 Switching Module



Note

- WS-X6708-10G-3C and WS-X6708-10G-3CXL are the orderable product IDs.
- The front panel is labeled WS-X6708-10GE.
- Cisco IOS software commands display WS-X6708-10GE with either WS-F6700-DFC3C or WS-F6700-DFC3CXL.
- To configure WS-X6708-10GE port oversubscription, use the **hw-module oversubscription** command.
- In these chassis, operation of a WS-X6708-10GE switching module without over-temperature alarms is supported only with operating temperatures up to 40° C:
 - [WS-C6513](#)
 - [CISCO7613](#)
 - [WS-C6509](#)
 - [WS-C6509-NEB](#)
 - [OSR-7609](#)
 - [WS-C6506](#)
 - [CISCO7606](#)

Full NEBS-compliance requires support for operating temperatures up to 55° C, which is available in all other chassis that support WS-X6708-10GE.



Note

All E-Series [chassis](#) provide NEBS compliance.

- Support in the [WS-C6509-NEB-A](#) chassis requires two [FAN-MOD-09](#) modules.
- WS-X6708-10GE is supported in the [WS-C6503-E](#) chassis.
- WS-X6708-10GE is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- In a [13-slot chassis](#), WS-X6708-10GE is supported only in slots 9 through 13 and does not power up in other slots.
- WS-X6708-10GE ports do not support VACL capture. ([CSCsb59015](#))

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6708-10G-3C (WS-X6708-10GE with WS-F6700-DFC3C) WS-X6708-10G-3CXL (WS-X6708-10GE with WS-F6700-DFC3CXL)	8-port 10-Gigabit Ethernet X2 module • dCEF720 • Supports egress multicast replication • QoS port architecture (Rx/Tx): – Oversubscription mode: 1p7q2t/1p7q4t – Performance mode: 8q4t/1p7q4t – Both modes support DSCP-based queueing • Dual switch-fabric connections Fabric Channel #1: Ports 2, 3, 6, 8 Fabric Channel #2: Ports 1, 4, 5, 7 • Number of ports: 8 Number of port groups: 8 Port ranges per port group: 1 port in each group	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF5

WS-X6704-10GE 4-port 10-Gigabit Ethernet XENPAK Switching Module

**Note**

- WS-X6704-10GE requires one of the following:
 - [WS-F6700-DFC3CXL](#)
 - [WS-F6700-DFC3C](#)
 - [WS-F6700-DFC3BXL](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3B](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3A](#) (not supported in virtual switch mode)
 - [WS-F6700-CFC](#)
- WS-X6704-10GE ships with [WS-F6700-CFC](#) installed unless ordered with [WS-F6700-DFC3CXL](#), [WS-F6700-DFC3C](#), [WS-F6700-DFC3BXL](#), [WS-F6700-DFC3B](#), or [WS-F6700-DFC3A](#).
- WS-X6704-10GE is supported in the [WS-C6503-E](#) chassis.
- WS-X6704-10GE is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- In a [13-slot chassis](#), WS-X6704-10GE is supported only in slots 9 through 13 and does not power up in other slots.
- On WS-X6704-10GE ports, STP BPDUs are not exempt from [Traffic Storm Control](#) multicast suppression. Do not configure multicast suppression on STP-protected WS-X6704-10GE ports that interconnect network devices.
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html
- Does not support ISL encapsulation.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6704-10GE	4-port 10-Gigabit Ethernet XENPAK • dCEF720 with a DFC • CEF720 with WS-F6700-CFC • Supports egress multicast replication • QoS port architecture (Rx/Tx): – With DFC3: 8q8t/1p7q8t – With CFC: 1q8t/1p7q8t • Dual switch-fabric connections - Fabric Channel #1: Ports 3 and 4 - Fabric Channel #2: Ports 1 and 2 • Number of ports: 4 Number of port groups: 4 Port ranges per port group: 1 port in each group	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 and DFC3C or DFC3CXL	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX

WS-X6502-10GE 1-port 10-Gigabit Ethernet Switching Module



Note

- WS-X6502-10GE does not support ISL encapsulation.
- Use with Release 12.2(33)SXH or later and a DFC requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6502-10GE	1-port 10-Gigabit Ethernet - dCEF256 with a DFC - QoS port architecture (Rx/Tx): 1p1q8t/1p2q1t - Number of ports: 1 Number of port groups: 1 Port ranges per port group: 1 port in 1 group	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
Optical Interface Module (OIM) for WS-X6502-10GE		
WS-G6488	10GBASE-LR serial 1310 nm long-reach OIM	12.2(14)SX
WS-G6483	10GBASE-ER serial 1550 nm extended-reach OIM	12.2(14)SX

Gigabit Ethernet Switching Modules

- [WS-X6748-SFP 48-port Gigabit Ethernet SFP Switching Module](#), page 51
- [WS-X6724-SFP 24-port Gigabit Ethernet SFP Switching Module](#), page 53
- [WS-X6816-GBIC 16-port Gigabit Ethernet GBIC Switching Module](#), page 55
- [WS-X6516A-GBIC 16-Port Gigabit Ethernet GBIC Switching Module](#), page 56
- [WS-X6516-GBIC 16-Port Gigabit Ethernet GBIC Switching Module](#), page 57
- [WS-X6416-GBIC 16-port Gigabit Ethernet GBIC Switching Module](#), page 58
- [WS-X6408A-GBIC 8-port Gigabit Ethernet GBIC Switching Module](#), page 58
- [WS-X6408-GBIC 8-port Gigabit Ethernet GBIC Switching Module](#), page 59

WS-X6748-SFP 48-port Gigabit Ethernet SFP Switching Module



Note

- WS-X6748-SFP requires one of the following:
 - [WS-F6700-DFC3CXL](#)
 - [WS-F6700-DFC3C](#)
 - [WS-F6700-DFC3BXL](#)
 - [WS-F6700-DFC3B](#)
 - [WS-F6700-DFC3A](#)
 - [WS-F6700-CFC](#)
- WS-X6748-SFP ships with [WS-F6700-CFC](#) installed unless ordered with [WS-F6700-DFC3CXL](#), [WS-F6700-DFC3C](#), [WS-F6700-DFC3BXL](#), [WS-F6700-DFC3B](#), or [WS-F6700-DFC3A](#).
- WS-X6748-SFP is supported in the [WS-C6503-E](#) chassis.
- WS-X6748-SFP is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- In a [13-slot chassis](#), WS-X6748-SFP is supported only in slots 9 through 13 and does not power up in other slots.
- On WS-X6748-SFP ports, STP BPDUs are not exempt from [Traffic Storm Control](#) multicast suppression. Do not configure multicast suppression on STP-protected WS-X6748-SFP ports that interconnect network devices.
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6748-SFP	48-port Gigabit Ethernet SFP - dCEF720 with a DFC (only WS-F6700-DFC3CXL and WS-F6700-DFC3C are supported in virtual switch mode) - CEF720 with WS-F6700-CFC - Supports egress multicast replication - QoS architecture: - With DFC3: 2q8t/1p3q8t - With CFC: 1q8t/1p3q8t - Dual switch-fabric connections Fabric Channel #1: Ports 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48 Fabric Channel #2: Ports 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47 - Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 and DFC3C or DFC3CXL	12.2(33)SXH
	With Supervisor Engine 720	12.2(17d)SXB

WS-X6724-SFP 24-port Gigabit Ethernet SFP Switching Module



Note

- WS-X6724-SFP requires one of the following:
 - [WS-F6700-DFC3CXL](#)
 - [WS-F6700-DFC3C](#)
 - [WS-F6700-DFC3BXL](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3B](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3A](#) (not supported in virtual switch mode)
 - [WS-F6700-CFC](#)
- WS-X6724-SFP ships with [WS-F6700-CFC](#) installed unless ordered with [WS-F6700-DFC3CXL](#), [WS-F6700-DFC3C](#), [WS-F6700-DFC3BXL](#), [WS-F6700-DFC3B](#), or [WS-F6700-DFC3A](#).
- WS-X6724-SFP is supported in the [WS-C6503-E](#) chassis.
- WS-X6724-SFP is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- WS-X6724-SFP is supported in all slots of a [13-slot chassis](#).
- On WS-X6724-SFP ports, STP BPDUs are not exempt from [Traffic Storm Control](#) multicast suppression. Do not configure multicast suppression on STP-protected WS-X6724-SFP ports that interconnect network devices.
- Use with Release 12.2(33)SXH or later requires switching module ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6143.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6724-SFP	24-port Gigabit Mbps Ethernet SFP - dCEF720 with a DFC - CEF720 with WS-F6700-CFC - Supports egress multicast replication - QoS architecture: - With DFC3: 2q8t/1p3q8t - With CFC: 1q8t/1p3q8t - Number of ports: 24 Number of port groups: 2 Port ranges per port group: 1–12, 13–24	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 and DFC3C or DFC3CXL	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX

WS-X6816-GBIC 16-port Gigabit Ethernet GBIC Switching Module



Note

- WS-X6816-GBIC requires one of these for use with Supervisor Engine 720-10GE or Supervisor Engine 720:
 - WS-F6K-DFC3BXL
 - WS-F6K-DFC3B
 - WS-F6K-DFC3A
- In a 13-slot chassis, WS-X6816-GBIC is supported only in slots 9 through 13 and does not power up in other slots.
- Use with Release 12.2(33)SXH or later requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
WS-X6816-GBIC	16-port Gigabit Ethernet GBIC - dCEF256 - QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t - Dual switch-fabric connections Fabric Channel #1: Ports 1–8 Fabric Channel #2: Ports 9–16 - Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX

WS-X6516A-GBIC 16-Port Gigabit Ethernet GBIC Switching Module



Note

- Use with Release 12.2(33)SXH or later requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6516A-GBIC	16-port Gigabit Ethernet GBIC - dCEF256 with a DFC - CEF256 1-MB per-port packet buffers - Supports egress multicast replication - QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t - Number of ports: 16 - Number of port groups: 2 - Port ranges per port group: 1–8, 9–16	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6516-GBIC 16-Port Gigabit Ethernet GBIC Switching Module



Note

- Use with Release 12.2(33)SXH or later and a DFC requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html
- Supervisor Engine 720 supports a DFC3 on these WS-X6516-GBIC hardware revisions:
 - Lower than 5.0
 - 5.5 and higher
- Supervisor Engine 720 does not support a DFC3 on WS-X6516-GBIC hardware revisions 5.0 through 5.4. With a Supervisor Engine 720 and with a DFC3 installed, WS-X6516-GBIC hardware revisions 5.0 through 5.4 do not power up.
- With a Supervisor Engine 720 but without a DFC3, WS-X6516-GBIC hardware revisions 5.0 through 5.4 operate in bus mode.
- See external field notice 24494 for more information:
<http://www.cisco.com/en/US/ts/fn/200/fn24494.html>

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
WS-X6516-GBIC	16-port Gigabit Ethernet GBIC • dCEF256 with a DFC • CEF256 • 512-KB per-port packet buffers • QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t • Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6416-GBIC 16-port Gigabit Ethernet GBIC Switching Module

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6416-GBIC	16-port Gigabit Ethernet GBIC - QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t - Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6408A-GBIC 8-port Gigabit Ethernet GBIC Switching Module

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6408A-GBIC	8-port Gigabit Ethernet GBIC - QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t - Number of ports: 8 Number of port groups: 1 Port ranges per port group: 1–8	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6408-GBIC 8-port Gigabit Ethernet GBIC Switching Module

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6408-GBIC	8-port Gigabit Ethernet GBIC - QoS port architecture (Rx/Tx): 1q4t/2q2t - Number of ports: 8 Number of port groups: 1 Port ranges per port group: 1–8	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

10/100/1000 Ethernet Switching Modules

- [WS-X6748-GE-TX](#), page 60
- [WS-X6548-GE-TX](#), [WS-X6548V-GE-TX](#), [WS-X6548-GE-45AF](#), page 61
- [WS-X6148E-GE-45AT](#), page 63
- [WS-X6148A-GE-TX](#), [WS-X6148A-GE-45AF](#), page 64
- [WS-X6148-GE-TX](#), [WS-X6148V-GE-TX](#), [WS-X6148-GE-45AF](#), page 65
- [WS-X6516-GE-TX](#), page 66

WS-X6748-GE-TX

**Note**

- WS-X6748-GE-TX requires one of the following:
 - [WS-F6700-DFC3CXL](#)
 - [WS-F6700-DFC3C](#)
 - [WS-F6700-DFC3BXL](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3B](#) (not supported in virtual switch mode)
 - [WS-F6700-DFC3A](#) (not supported in virtual switch mode)
 - [WS-F6700-CFC](#)
- WS-X6748-GE-TX ships with [WS-F6700-CFC](#) installed unless ordered with [WS-F6700-DFC3CXL](#), [WS-F6700-DFC3C](#), [WS-F6700-DFC3BXL](#), [WS-F6700-DFC3B](#), or [WS-F6700-DFC3A](#).
- WS-X6748-GE-TX is supported in the [WS-C6503-E](#) chassis.
- WS-X6748-GE-TX is not supported in the [WS-C6503](#) and [CISCO7603](#) chassis.
- In a [13-slot chassis](#), WS-X6748-GE-TX is supported only in slots 9 through 13 and does not power up in other slots.
- On WS-X6748-GE-TX ports, STP BPDUs are not exempt from [Traffic Storm Control](#) multicast suppression. Do not configure multicast suppression on STP-protected WS-X6748-GE-TX ports that interconnect network devices.
- Use with Release 12.2(33)SXH or later and a DFC requires DFC ROMMON version 12.2(18r)S1 or later. To display the switching module ROMMON version, enter the **remote command module module_slot_number show version | include ROM** command. To upgrade the switching module ROMMON, see this document:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_6010.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6748-GE-TX	48-port 10/100/1000 RJ-45 - dCEF720 with a DFC - CEF720 with WS-F6700-CFC - Supports egress multicast replication - QoS architecture: - With DFC3: 2q8t/1p3q8t - With CFC: 1q8t/1p3q8t - Dual switch-fabric connections Fabric Channel #1: Ports 25–48 Fabric Channel #2: Ports 1–24 - Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX

WS-X6548-GE-TX, WS-X6548V-GE-TX, WS-X6548-GE-45AF



Note

- Release 12.2(17b)SXA and later releases provide support for more than 1 Gbps of traffic per EtherChannel on the WS-X6548-GE-TX (and voice-power daughtercard equipped) switching modules.
- WS-X6548-GE-TX (and voice-power daughtercard equipped) switching modules do not support these features:
 - DFCs
 - ISL trunking
 - Jumbo frames
 - 802.1Q tunneling
 - Traffic storm control

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6548-GE-TX WS-X6548V-GE-TX WS-X6548-GE-45AF	48-port 10/100/1000 Mbps • RJ-45 • CEF256 • WS-X6548-GE-TX supports: – WS-F6K-VPWR-GE – WS-F6K-GE48-AF – WS-F6K-48-AF • WS-X6548V-GE-TX has WS-F6K-VPWR-GE • WS-X6548-GE-45AF has WS-F6K-GE48-AF or WS-F6K-48-AF • With WS-F6K-GE48-AF, supports up to 45 ports of ePoE (16.8W). • QoS port architecture (Rx/Tx): 1q2t/1p2q2t • Number of ports: 48 Number of port groups: 2 Port ranges per port group: 1–24, 25–48 • The aggregate bandwidth of each set of 8 ports (1–8, 9–16, 17–24, 25–32, 33–40, and 41–48) is 1 Gbps.	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720 (except WS-F6K-GE48-AF or WS-F6K-48-AF)	12.2(17a)SX
	WS-F6K-GE48-AF or WS-F6K-48-AF with Supervisor Engine 720	12.2(17d)SXB
	With Supervisor Engine 32	12.2(18)SXF
	WS-F6K-GE48-AF or WS-F6K-48-AF with Supervisor Engine 32	12.2(18)SXF

WS-X6148E-GE-45AT



Note

- WS-X6148E-GE-45AT does not support:
 - DFC
 - Traffic storm control

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148E-GE-45AT	48-port 10/100/1000 Mbps • RJ-45 • WS-X6148E-GE-45AT has WS-F6K-48-AT (IEEE 802.3at PoE) – With Release 12.2(33)SXJ2 and later releases, supports Class 4 PoE+: 30.00 W at the PSE (12.95 W to 25.50 W at the PD). – With Releases earlier than Release 12.2(33)SXJ2, supports up to 45 ports of ePoE (16.8 W at the PSE, ePoE for 45 ports maximum). • QoS port architecture (Rx/Tx): 1q2t/1p3q8t • Number of ports: 48 Number of port groups: 6 Port ranges per port group: 1–8, 9–16, 17–24, 25–32, 33–40, 41–48 • The aggregate bandwidth of each set of 8 ports (1–8, 9–16, 17–24, 25–32, 33–40, and 41–48) is 1 Gbps.	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SX14
	With Supervisor Engine 720	
	With Supervisor Engine 32	

WS-X6148A-GE-TX, WS-X6148A-GE-45AF



Note

- WS-X6148A-GE-TX and WS-X6148A-GE-45AF do not support these features:
 - WS-F6K-DFC3A, WS-F6K-DFC3B, or WS-F6K-DFC3BXL
 - Traffic storm control

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148A-GE-TX WS-X6148A-GE-45AF	48-port 10/100/1000 Mbps - RJ-45 - WS-X6148A-GE-TX supports WS-F6K-GE48-AF or WS-F6K-48-AF - WS-X6148A-GE-45AF has WS-F6K-GE48-AF or WS-F6K-48-AF - With WS-F6K-GE48-AF, supports up to 45 ports of ePoE (16.8W). - QoS port architecture (Rx/Tx): 1q2t/1p3q8t - Number of ports: 48 Number of port groups: 6 Port ranges per port group: 1–8, 9–16, 17–24, 25–32, 33–40, 41–48 - The aggregate bandwidth of each set of 8 ports (1–8, 9–16, 17–24, 25–32, 33–40, and 41–48) is 1 Gbps.	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF
	With Supervisor Engine 32	12.2(18)SXF

WS-X6148-GE-TX, WS-X6148V-GE-TX, WS-X6148-GE-45AF



Note

- WS-X6148-GE-TX, WS-X6148V-GE-TX, and WS-X6148-GE-45AF do not support these features:
 - More than 1 Gbps of traffic per EtherChannel
 - [WS-F6K-DFC3A](#), [WS-F6K-DFC3B](#), or [WS-F6K-DFC3BXL](#)
 - ISL trunking
 - Jumbo frames
 - 802.1Q tunneling
 - Traffic storm control

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148-GE-TX WS-X6148V-GE-TX WS-X6148-GE-45AF	48-port 10/100/1000 Mbps • RJ-45 • WS-X6148-GE-TX supports: – WS-F6K-VPWR-GE – WS-F6K-GE48-AF – WS-F6K-48-AF • WS-X6148V-GE-TX has WS-F6K-VPWR-GE • WS-X6148-GE-45AF has WS-F6K-GE48-AF or WS-F6K-48-AF • With WS-F6K-GE48-AF, supports up to 45 ports of ePoE (16.8W). • QoS port architecture (Rx/Tx): 1q2t/1p2q2t • Number of ports: 48 Number of port groups: 2 Port ranges per port group: 1–24, 25–48 • The aggregate bandwidth of each port group is 1 Gbps.	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720 (except WS-F6K-GE48-AF or WS-F6K-48-AF)	12.2(17a)SX
	WS-F6K-GE48-AF or WS-F6K-48-AF with Supervisor Engine 720	12.2(17d)SXB
	With Supervisor Engine 32	12.2(18)SXF
	WS-F6K-GE48-AF or WS-F6K-48-AF with Supervisor Engine 32	12.2(18)SXF

WS-X6516-GE-TX

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6516-GE-TX	16-port 10/100/1000BASE-T - dCEF256 with a DFC - CEF256 - QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t - Number of ports: 16 Number of port groups: 2 Port ranges per port group: 1–8, 9–16	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Fast Ethernet Switching Modules

- [WS-X6148-FE-SFP, page 66](#)
- [WS-X6524-100FX-MM, page 67](#)
- [WS-X6324-100FX-MM, page 67](#)


Note

Fast Ethernet switching modules are not supported in VSS mode.

WS-X6148-FE-SFP

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148-FE-SFP	48-port 100BASE-FX - Requires Fast Ethernet SFPs - QoS port architecture (Rx/Tx): 1p1q4t/1p3q8t - Number of ports: 48 Number of port groups: 3 Port ranges per port group: 1–16, 17–32, and 33–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF
	With Supervisor Engine 32	12.2(18)SXF

WS-X6524-100FX-MM

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6524-100FX-MM	24-port 100FX Ethernet multimode - dCEF256 with a DFC - CEF256 - QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t - Number of ports: 24 Number of port groups: 1 Port ranges per port group: 1–24	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6324-100FX-MM

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6324-100FX-MM	24-port 100FX Ethernet - Single mode and multimode MT-RJ 128-KB per-port packet buffers - QoS port architecture (Rx/Tx): 1q4t/2q2t - Number of ports: 24 Number of port groups: 2 Port ranges per port group: 1–12, 13–24	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Ethernet/Fast Ethernet (10/100) Switching Modules

- [WS-X6548-RJ-45](#), page 68
- [WS-X6548-RJ-21](#), page 69
- [WS-X6148X2-RJ-45](#), [WS-X6148X2-45AF](#), page 69
- [WS-X6196-RJ-21](#), [WS-X6196-21AF](#), page 70
- [WS-X6348-RJ-45](#), [WS-X6348-RJ-45V](#), page 70
- [WS-X6348-RJ-21V](#), page 71
- [WS-X6148A-RJ-45](#), [WS-X6148A-45AF](#), page 71
- [WS-X6148-RJ-45](#), [WS-X6148-RJ45V](#), [WS-X6148-45AF](#), page 72
- [WS-X6148-RJ-21](#), [WS-X6148-RJ21V](#), [WS-X6148-21AF](#), page 73
- [WS-F6K-FE48X2-AF](#), page 74
- [WS-F6K-GE48-AF](#), [WS-F6K-48-AF](#), page 74
- [WS-F6K-GE48-AF](#), [WS-F6K-48-AF](#), page 74



Note

Ethernet/Fast Ethernet (10/100) switching modules are not supported in VSS mode.

WS-X6548-RJ-45

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6548-RJ-45	48-port 10/100TX RJ-45 • dCEF256 with a DFC • CEF256 • QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t • Number of ports: 48 Number of port groups: 1 Port ranges per port group: 1–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6548-RJ-21

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6548-RJ-21	48-port 10/100TX RJ-21 - dCEF256 with a DFC - CEF256 - QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t - Number of ports: 48 Number of port groups: 1 Port ranges per port group: 1–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6148X2-RJ-45, WS-X6148X2-45AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148X2-RJ-45 WS-X6148X2-45AF	96-port 10/100TX RJ-45 - QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t - WS-X6148X2-RJ-45 supports WS-F6K-FE48X2-AF - WS-X6148X2-45AF has WS-F6K-FE48X2-AF	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF3
	With Supervisor Engine 32	12.2(18)SXF3

WS-X6196-RJ-21, WS-X6196-21AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6196-RJ-21 WS-X6196-21AF	96-port 10/100TX RJ-21 - QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t - WS-X6196-RJ-21 supports WS-F6K-FE48X2-AF - WS-X6196-21AF has WS-F6K-FE48X2-AF	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF3
	With Supervisor Engine 32	12.2(18)SXF3

WS-X6348-RJ-45, WS-X6348-RJ-45V

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6348-RJ-45 WS-X6348-RJ-45V	48-port 10/100TX RJ-45 128-KB per-port packet buffers - QoS port architecture (Rx/Tx): 1q4t/2q2t - WS-X6348-RJ-45 supports WS-F6K-VPWR - WS-X6348-RJ-45V has WS-F6K-VPWR - Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6348-RJ-21V

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6348-RJ-21V	48-port 10/100TX RJ-21 128-KB per-port packet buffers - QoS port architecture (Rx/Tx): 1q4t/2q2t - Has WS-F6K-VPWR - Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-X6148A-RJ-45, WS-X6148A-45AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148A-RJ-45 WS-X6148A-45AF	48-port 10/100TX RJ-45 5.3-MB per-port packet buffers - QoS port architecture (Rx/Tx): 1p1q4t/1p3q8t - WS-X6148A-RJ-45 supports WS-F6K-GE48-AF or WS-F6K-48-AF - WS-X6148A-45AF has WS-F6K-GE48-AF or WS-F6K-48-AF - Number of ports: 48 Number of port groups: 6 Port ranges per port group: 1–8, 9–16, 17–24, 25–32, 33–40, 41–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF
	With Supervisor Engine 32	12.2(18)SXF

WS-X6148-RJ-45, WS-X6148-RJ45V, WS-X6148-45AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148-RJ-45 WS-X6148-RJ45V WS-X6148-45AF	48-port 10/100TX RJ-45 • 128-KB per-port packet buffers • QoS port architecture (Rx/Tx): 1q4t/2q2t • WS-X6148-RJ-45 supports WS-F6K-VPWR • WS-X6148-RJ-45V has WS-F6K-VPWR • WS-X6148-45AF has WS-F6K-48-AF • Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720 (except with WS-F6K-48-AF)	12.2(14)SX
	WS-F6K-48-AF with Supervisor Engine 720	12.2(17d)SXB
	With Supervisor Engine 32	12.2(18)SXF
	WS-F6K-48-AF with Supervisor Engine 32	

WS-X6148-RJ-21, WS-X6148-RJ21V, WS-X6148-21AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6148-RJ-21 WS-X6148-RJ21V WS-X6148-21AF	48-port 10/100TX RJ-21 128-KB per-port packet buffers - QoS port architecture (Rx/Tx): 1q4t/2q2t - WS-X6148-RJ-21 supports WS-F6K-VPWR - WS-X6148-RJ-21V has WS-F6K-VPWR - WS-X6148-21AF has WS-F6K-48-AF - Number of ports: 48 Number of port groups: 4 Port ranges per port group: 1–12, 13–24, 25–36, 37–48	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720 (except with WS-F6K-48-AF)	12.2(14)SX
	WS-F6K-48-AF with Supervisor Engine 720	12.2(17d)SXB
	With Supervisor Engine 32	12.2(18)SXF
	WS-F6K-48-AF with Supervisor Engine 32	

Power over Ethernet Daughtercards



Note

The IEEE 802.3at power over ethernet (PoE) daughtercard is available only with the [WS-X6148E-GE-45AT](#) switching module.

- [WS-F6K-FE48X2-AF](#), page 74
- [WS-F6K-GE48-AF](#), [WS-F6K-48-AF](#), page 74
- [WS-F6K-VPWR-GE](#), page 75
- [WS-F6K-VPWR](#), page 75

WS-F6K-FE48X2-AF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-FE48X2-AF	IEEE 802.3af PoE daughtercard for WS-X6148X2-RJ-45 and WS-X6196-RJ-21 .	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF
	With Supervisor Engine 32	12.2(18)SXF

WS-F6K-GE48-AF, WS-F6K-48-AF



Note

- WS-F6K-GE48-AF and WS-F6K-48-AF are not FRUs for these switching modules:
 - [WS-X6148-RJ-45](#) or [WS-X6148-RJ-45V](#) (replace with [WS-X6148-45AF-UG=](#)).
 - [WS-X6148-RJ-21](#) or [WS-X6148-RJ-21V](#) (replace with [WS-X6148-21AF-UG=](#)).
- With WS-X6548-GE-TX, WS-X6148-GE-TX, and WS-X6148A-GE-TX, supports up to 45 ports of ePoE (16.8W).

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-GE48-AF WS-F6K-48-AF	IEEE 802.3af PoE daughtercard for: WS-X6548-GE-TX WS-X6148-GE-TX WS-X6148A-GE-TX WS-X6148A-RJ-45	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(17d)SXB

WS-F6K-VPWR-GE

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-VPWR-GE	Prestandard PoE daughtercard for WS-X6548-GE-TX and WS-X6148-GE-TX	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(17a)SX
	With Supervisor Engine 32	12.2(18)SXF

WS-F6K-VPWR

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-F6K-VPWR	Prestandard PoE daughtercard for:	
	• WS-X6348-RJ-45	
	• WS-X6348-RJ-21V	
	• WS-X6148-RJ-45	
	• WS-X6148-RJ-21	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Transceivers

- [X2 Modules, page 76](#)
- [XENPAKs, page 78](#)
- [Small Form-Factor Pluggable \(SFP\) Modules, page 80](#)
- [Gigabit Interface Converters \(GBICs\), page 82](#)

X2 Modules



Note

- [WS-X6708-10GE](#) and [WS-X6716-10G](#) do not support X2 modules shipped before the release of [WS-X6708-10GE](#) with Release 12.2(18)SXF5. The unsupported X2 modules are labeled with a number that ends with -01. (This restriction does not apply to X2-10GB-LRM.)
- All X2 modules shipped since [WS-X6716-10G](#) became available provide EMI compliance with WS-X6716-10G.
- Some X2 modules shipped before [WS-X6716-10G](#) became available might not provide EMI compliance with WS-X6716-10G. See the information listed for each type of X2 module in the following table.
- For information about X2 modules, see the *Cisco 10GBASE X2 Modules* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6574/product_data_sheet0900aecd801f92aa.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
CVR-X2-SFP10G	10G X2 to SFP+ Converter	12.2(33)SX12
	10 Gbps Ethernet SFP+ Modules	
	SFP-10G-LR—10GBASE-LR 1310 nm SMF	12.2(33)SXJ1
	SFP-10G-LRM—10GBASE-LRM 1310 nm MMF and SMF	12.2(33)SX14 (12.2(33)SX14a or later recommended)
	SFP-10G-SR—10GBASE-SR 850 nm MMF	12.2(33)SX12
	SFP-H10GB-CU1M—1m Twinax cable, passive, 30AWG cable assembly	
	SFP-H10GB-CU3M—3m Twinax cable, passive, 30AWG cable assembly	
	SFP-H10GB-CU5M—5m Twinax cable, passive, 24AWG cable assembly	

Product ID (append “=” for spares)	Product Description		Minimum Software Versions
DWDM-X2-60.61=	10GBASE-DWDM 1560.61 nm X2 (100-GHz ITU grid)	ITU 21	12.2(33)SXI
DWDM-X2-59.79=	10GBASE-DWDM 1559.79 nm X2 (100-GHz ITU grid)	ITU 22	
DWDM-X2-58.98=	10GBASE-DWDM 1558.98 nm X2 (100-GHz ITU grid)	ITU 23	
DWDM-X2-58.17=	10GBASE-DWDM 1558.17 nm X2 (100-GHz ITU grid)	ITU 24	
DWDM-X2-56.55=	10GBASE-DWDM 1556.55 nm X2 (100-GHz ITU grid)	ITU 26	
DWDM-X2-55.75=	10GBASE-DWDM 1555.75 nm X2 (100-GHz ITU grid)	ITU 27	
DWDM-X2-54.94=	10GBASE-DWDM 1554.94 nm X2 (100-GHz ITU grid)	ITU 28	
DWDM-X2-54.13=	10GBASE-DWDM 1554.13 nm X2 (100-GHz ITU grid)	ITU 29	
DWDM-X2-52.52=	10GBASE-DWDM 1552.52 nm X2 (100-GHz ITU grid)	ITU 31	
DWDM-X2-51.72=	10GBASE-DWDM 1551.72 nm X2 (100-GHz ITU grid)	ITU 32	
DWDM-X2-50.92=	10GBASE-DWDM 1550.92 nm X2 (100-GHz ITU grid)	ITU 33	
DWDM-X2-50.12=	10GBASE-DWDM 1550.12 nm X2 (100-GHz ITU grid)	ITU 34	
DWDM-X2-48.51=	10GBASE-DWDM 1548.51 nm X2 (100-GHz ITU grid)	ITU 36	
DWDM-X2-47.72=	10GBASE-DWDM 1547.72 nm X2 (100-GHz ITU grid)	ITU 37	
DWDM-X2-46.92=	10GBASE-DWDM 1546.92 nm X2 (100-GHz ITU grid)	ITU 38	
DWDM-X2-46.12=	10GBASE-DWDM 1546.12 nm X2 (100-GHz ITU grid)	ITU 39	
DWDM-X2-44.53=	10GBASE-DWDM 1544.53 nm X2 (100-GHz ITU grid)	ITU 41	
DWDM-X2-43.73=	10GBASE-DWDM 1543.73 nm X2 (100-GHz ITU grid)	ITU 42	
DWDM-X2-42.94=	10GBASE-DWDM 1542.94 nm X2 (100-GHz ITU grid)	ITU 43	
DWDM-X2-42.14=	10GBASE-DWDM 1542.14 nm X2 (100-GHz ITU grid)	ITU 44	
DWDM-X2-40.56=	10GBASE-DWDM 1540.56 nm X2 (100-GHz ITU grid)	ITU 46	
DWDM-X2-39.77=	10GBASE-DWDM 1539.77 nm X2 (100-GHz ITU grid)	ITU 47	
DWDM-X2-38.98=	10GBASE-DWDM 1538.98 nm X2 (100-GHz ITU grid)	ITU 48	
DWDM-X2-38.19=	10GBASE-DWDM 1538.19 nm X2 (100-GHz ITU grid)	ITU 49	
DWDM-X2-36.61=	10GBASE-DWDM 1536.61 nm X2 (100-GHz ITU grid)	ITU 51	
DWDM-X2-35.82=	10GBASE-DWDM 1535.82 nm X2 (100-GHz ITU grid)	ITU 52	
DWDM-X2-35.04=	10GBASE-DWDM 1535.04 nm X2 (100-GHz ITU grid)	ITU 53	
DWDM-X2-34.25=	10GBASE-DWDM 1534.25 nm X2 (100-GHz ITU grid)	ITU 54	
DWDM-X2-32.68=	10GBASE-DWDM 1532.68 nm X2 (100-GHz ITU grid)	ITU 56	
DWDM-X2-31.90=	10GBASE-DWDM 1531.90 nm X2 (100-GHz ITU grid)	ITU 57	
DWDM-X2-31.12=	10GBASE-DWDM 1531.12 nm X2 (100-GHz ITU grid)	ITU 58	
DWDM-X2-30.33=	10GBASE-DWDM 1530.33 nm X2 (100-GHz ITU grid)	ITU 59	
X2-10GB-T	10GBASE-T X2 Module for CAT6A/CAT7 copper cable		12.2(33)SXJ1
X2-10GB-ZR	10GBASE-ZR X2 Module for SMF		12.2(33)SXI

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
X2-10GB-CX4	10GBASE for CX4 (copper) cable	12.2(18)SXF5
X2-10GB-ER	10GBASE-ER Serial 1550-nm extended-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF) Note X2-10GB-ER modules labeled with a number that ends with -02 do not provide EMI compliance with WS-X6716-10G .	12.2(18)SXF5
X2-10GB-LR	10GBASE-LR Serial 1310-nm long-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF) Note X2-10GB-LR modules labeled with a number that ends with -02 or -03 do not provide EMI compliance with WS-X6716-10G .	12.2(18)SXF5
X2-10GB-LRM	10GBASE-LRM for FDDI-grade multimode fiber (MMF) Note Not supported by the show idprom command. (CSCsj35671)	12.2(18)SXF8
X2-10GB-LX4	10GBASE-LX4 Serial 1310-nm multimode (MMF) Note - See field notice 62840 for information about unsupported 10GBASE-LX4 modules: http://www.cisco.com/en/US/ts/fn/misc/FN62840.html - X2-10GB-LX4 modules labeled with a number that ends with -01 to -03 do not provide EMI compliance with WS-X6716-10G.	12.2(18)SXF5
X2-10GB-SR	10GBASE-SR Serial 850-nm short-reach multimode (MMF)	12.2(18)SXF5

XENPAKs



Note

- For information about DWDM XENPAKs, see the *Cisco 10GBase DWDM XENPAK Modules* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6576/product_data_sheet0900aecd801f9333.html
- For information about other XENPAKs, see the *Cisco 10GBASE XENPAK Modules* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps2797/ps5138/product_data_sheet09186a008007cd00_ps5251_Products_Data_Sheet.html

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
XENPAK-10GB-LRM	10GBASE-LRM XENPAK Module for MMF Note Not supported by the show idprom command. (CSCsl21260)	12.2(33)SXH1
DWDM-XENPAK	10GBASE dense wavelength-division multiplexing (DWDM) 100-GHz ITU grid	12.2(18)SXE
WDM-XENPAK-REC	10GBASE receive-only wavelength division multiplexing (WDM)	12.2(18)SXE

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
XENPAK-10GB-CX4	10GBASE for CX4 (copper) cable; uses Infiniband connectors	12.2(17d)SXB1
XENPAK-10GB-ER	10GBASE-ER Serial 1550-nm extended-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF) Note XENPAK-10GB-ER units with Part No. 800-24557-01 are not supported, as described in this external field notice (CSCee47030): http://www.cisco.com/en/US/ts/fn/200/fn29736.html	12.2(17a)SX
XENPAK-10GB-ER+	10GBASE-ER Serial 1550-nm extended-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(17a)SX
XENPAK-10GB-LR	10GBASE-LR Serial 1310-nm long-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(17a)SX
XENPAK-10GB-LR+	10GBASE-LR Serial 1310-nm long-reach, single-mode fiber (SMF), dispersion-shifted fiber (DSF)	12.2(17a)SX
XENPAK-10GB-LW	10GBASE-LW XENPAK Module with WAN PHY for SMF Note XENPAK-10GB-LW operates at an interface speed compatible with SONET/SDH OC-192/STM-64. XENPAK-10GB-LW links might go up and down if the data rate exceeds 9Gbs. (CSCsi58211)	12.2(18)SXE
XENPAK-10GB-LX4	10GBASE-LX4 Serial 1310-nm multimode (MMF)	12.2(17a)SX1
XENPAK-10GB-SR	10GBASE-SR Serial 850-nm short-reach multimode (MMF)	12.2(17a)SX1
XENPAK-10GB-ZR	10GBASE for any SMF type	12.2(18)SXF

Small Form-Factor Pluggable (SFP) Modules

These sections describe SFPs:

- [10 Gbps Ethernet SFP+ Modules, page 76](#)
- [Gigabit Ethernet SFP Modules, page 80](#)
- [Fast Ethernet SFP+ Modules, page 82](#)

Gigabit Ethernet SFP Modules



Note

- For information about coarse wavelength-division multiplexing (CWDM) SFPs, see the *Cisco CWDM GBIC and SFP Solutions* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6575/product_data_sheet09186a00801a557c_ps4999_Products_Data_Sheet.html
- For information about DWDM SFPs, see the *Cisco Dense Wavelength-Division Multiplexing Small Form-Factor Pluggable Module* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6576/product_data_sheet0900aecd80582763.html
- See the “[Unsupported Hardware](#)” section on page 112 for information about unsupported DWDM-SFPs.
- For information about other SFPs, see the *Cisco SFP Optics For Gigabit Ethernet Applications* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6577/product_data_sheet0900aecd8033f885.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
GLC-BX-D	1000BASE-BX10 SFP module for single-strand SMF, 1490-nm TX/1310-nm RX wavelength	12.2(18)SXE
GLC-BX-U	1000BASE-BX10 SFP module for single-strand SMF, 1310-nm TX/1490-nm RX wavelength	12.2(18)SXE
GLC-LH-SMD GLC-LH-SM	1000BASE-LX/LH SFP	12.2(17a)SX
GLC-SX-MMD GLC-SX-MM	1000BASE-SX SFP	12.2(14)SX
GLC-T	1000BASE-T 10/100/1000 SFP module Note Supported only at 1000 Mbps.	12.2(17a)SX
GLC-ZX-SM	1000BASE-ZX SFP module	12.2(17d)SXB1
CWDM-SFP-1470	CWDM 1470-nm (Gray) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1490	CWDM 1490-nm (Violet) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1510	CWDM 1510-nm (Blue) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
CWDM-SFP-1530	CWDM 1530-nm (Green) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1550	CWDM 1550-nm (Yellow) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1570	CWDM 1570-nm (Orange) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1590	CWDM 1590-nm (Red) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
CWDM-SFP-1610	CWDM 1610-nm (Brown) Gigabit Ethernet, 1 and 2 Gb Fibre Channel SFP module	12.2(17a)SX
DWDM-SFP-5817	1000BASE-DWDM 1558.17 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-5252	1000BASE-DWDM 1552.52 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-5172	1000BASE-DWDM 1551.72 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-5012	1000BASE-DWDM 1550.12 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-4692	1000BASE-DWDM 1546.92 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-4373	1000BASE-DWDM 1543.73 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-4214	1000BASE-DWDM 1542.14 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-3977	1000BASE-DWDM 1539.77 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-3898	1000BASE-DWDM 1538.98 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-3582	1000BASE-DWDM 1535.82 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-3504	1000BASE-DWDM 1535.04 nm SFP (100-GHz ITU grid) SFP module	12.2(33)SXH
DWDM-SFP-6061	1000BASE-DWDM 1560.61 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5979	1000BASE-DWDM 1559.79 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5898	1000BASE-DWDM 1558.98 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5655	1000BASE-DWDM 1556.55 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5575	1000BASE-DWDM 1555.75 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5494	1000BASE-DWDM 1554.94 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5413	1000BASE-DWDM 1554.13 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-5092	1000BASE-DWDM 1550.92 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4851	1000BASE-DWDM 1548.51 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4772	1000BASE-DWDM 1547.72 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4612	1000BASE-DWDM 1546.12 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4453	1000BASE-DWDM 1544.53 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4294	1000BASE-DWDM 1542.94 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-4056	1000BASE-DWDM 1540.56 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3819	1000BASE-DWDM 1538.19 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3661	1000BASE-DWDM 1536.61 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3425	1000BASE-DWDM 1534.25 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3268	1000BASE-DWDM 1532.68 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
DWDM-SFP-3190	1000BASE-DWDM 1531.90 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3112	1000BASE-DWDM 1531.12 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8
DWDM-SFP-3033	1000BASE-DWDM 1530.33 nm SFP (100-GHz ITU grid) SFP module	12.2(18)SXF8

Fast Ethernet SFP+ Modules



Note

- Fast Ethernet SFPs are supported in these modules:
 - CAT6000-VS-S720-10G/MSFC3
 - ME6524
 - WS-X6148-FE-SFP
- For information about Fast Ethernet SFPs, see the *Cisco 100BASE-X SFP For Fast Ethernet SFP Ports* data sheet:
http://www.cisco.com/en/US/prod/collateral/modules/ps5455/ps6578/product_data_sheet0900aecd801f931c.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
GLC-FE-100BX-U	100BASE-BX10-U SFP	12.2(18)SXF2
GLC-FE-100BX-D	100BASE-BX10-D SFP	12.2(18)SXF2
GLC-FE-100EX	100BASEEX SFP	12.2(18)SXF
GLC-FE-100ZX	100BASEZX SFP	12.2(18)SXF
GLC-FE-100FX	100BASEFX SFP	12.2(18)SXF
GLC-FE-100LX	100BASELX SFP	12.2(18)SXF



Note

GLC-GE-100FX Fast Ethernet SFPs are not supported.

Gigabit Interface Converters (GBICs)



Note

The support listed in this section applies to all modules that use GBICs.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WDM-GBIC-REC	Receive-only wavelength division multiplexing (WDM) GBIC	12.2(18)SXE
DWDM-GBIC	Dense wavelength division multiplexing (DWDM) GBIC	12.2(17a)SX
CWDM-GBIC-1470	Cisco 1000BASE-CWDM GBIC, 1470 nm (Gray)	12.2(17a)SX
CWDM-GBIC-1490	Cisco 1000BASE-CWDM GBIC, 1490 nm (Violet)	
CWDM-GBIC-1510	Cisco 1000BASE-CWDM GBIC, 1510 nm (Blue)	
CWDM-GBIC-1530	Cisco 1000BASE-CWDM GBIC, 1530 nm (Green)	
CWDM-GBIC-1550	Cisco 1000BASE-CWDM GBIC, 1550 nm (Yellow)	
CWDM-GBIC-1570	Cisco 1000BASE-CWDM GBIC, 1570 nm (Orange)	
CWDM-GBIC-1590	Cisco 1000BASE-CWDM GBIC, 1590 nm (Red)	
CWDM-GBIC-1610	Cisco 1000BASE-CWDM GBIC, 1610 nm (Brown)	
WS-G5483	1000BASE-T GBIC	12.2(14)SX
WS-G5484	Short wavelength, 1000BASE-SX	12.2(14)SX
WS-G5486	Long wavelength/long haul, 1000BASE-LX/LH	12.2(14)SX
WS-G5487	Extended distance, 1000BASE-ZX	12.2(14)SX

Shared Port Adapter (SPA) Interface Processors (SIPs)


Note

- SIPs are supported only in images that contain “_wan” in the image name.
- See the [“FPD Image Packages” section on page 7](#) for information about additional procedures required to support SIPs with Release 12.2(18)SXE and later releases.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
7600-SIP-600	SPA Interface Processor-600	
	Note • 7600-SIP-600 has a WS-F6700-DFC3BXL. • Not supported with Supervisor Engine 32. • In Release 12.2(33)SXJ1 and later releases, CDP is disabled by default on 7600-SIP-600 ports (CSCtk12860).	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXI
	With Supervisor Engine 720 Note • Not supported in PFC3A mode. • Not supported in release 12.2(33)SXH and rebuilds.	12.2(18)SXF 12.2(33)SXI
7600-SIP-400	SPA Interface Processor-400	
	With Supervisor Engine 720-10GE in VSS mode	12.2(33)SXI4
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720 (not supported in PFC3A mode)	12.2(18)SXE
	With Supervisor Engine 32	12.2(18)SXF
7600-SIP-200	SPA Interface Processor-200	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXE
	With Supervisor Engine 32	12.2(18)SXF

Shared Port Adapters (SPAs)

These sections describe SPAs:

- [Ethernet SPAs, page 85](#)
- [POS SPAs, page 86](#)
- [ATM SPAs, page 87](#)
- [SFPs for OC3 and OC12 POS and ATM SPAs, page 88](#)
- [Serial SPAs, page 88](#)

Ethernet SPAs

These sections describe Ethernet SPAs:

- [10-Gigabit Ethernet SPAs, page 85](#)
- [Gigabit Ethernet SPAs, page 85](#)
- [10/100 Mbps Ethernet SPAs, page 86](#)

10-Gigabit Ethernet SPAs



Note

Release 12.2(33)SXH and rebuilds do not support [7600-SIP-600](#).

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-1X10GE-L-V2	7600-SIP-400	1-Port 10 Gigabit Ethernet SPA	12.2(33)SX12
SPA-1XTENGE-XFP	7600-SIP-600	1-port 10-Gigabit Ethernet SPA	12.2(33)SXI
XFP Modules Supported in 10-Gigabit Ethernet SPAs			
XFP-10GLR-OC192LR	10-Gigabit Ethernet LR (10 km)		

Gigabit Ethernet SPAs



Note

Release 12.2(33)SXH and rebuilds do not support [7600-SIP-600](#).

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-10X1GE	7600-SIP-600	10-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SXI
SPA-5X1GE-V2	7600-SIP-600	5-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SXJ
SPA-5X1GE	7600-SIP-600	5-port Gigabit Ethernet SPA, SFP Optics	12.2(33)SXI

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-2X1GE-V2	7600-SIP-400	2-port Gigabit Ethernet SPA, SFP Optics, version 2	12.2(33)SXI
SPA-2X1GE	7600-SIP-400	2-port Gigabit Ethernet SPA, SFP Optics	12.2(18)SXF
SFPs Supported in Gigabit Ethernet SPAs			
SFP-GE-S	Extended Temperature SX SFP		12.2(18)SXF
SFP-GE-L	Extended Temperature LX/LH SFP		
SFP-GE-Z	Extended Temperature ZX SFP		
SFP-GE-T	Cisco 1000BASE-T SFP (NEBS 3 ESD)		12.2(33)SXH

10/100 Mbps Ethernet SPAs

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-8X1FE-TX-V2	7600-SIP-200	8-port 10/100 Ethernet SPA TX	12.2(33)SXH
SPA-4X1FE-TX-V2	7600-SIP-200	4-port 10/100 Ethernet SPA TX	12.2(33)SXH

POS SPAs



Note

- Release 12.2(33)SXH and rebuilds do not support 7600-SIP-600.
- With Release 12.2(33)SXI and later releases where CSCso97991 is not resolved, you must configure an appropriate burst size when you configure QoS policing on WAN ports. Do not rely on the burst size calculated by QoS.

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-0C192POS-VSR	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, VSR-1	12.2(33)SXI
SPA-0C192POS-LR	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, SM-LR	12.2(33)SXI
SPA-0C192POS-XFP	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, XFP Optics	12.2(33)SXI
		XFP Modules Supported in SPA-0C192POS-XFP	
		XFP-10GLR-OC192SR Single-Mode (SM) Short Reach (SR)	
		XFP-10GER-OC192IR Single-Mode (SM) Intermediate Reach (IR-2)	
SPA-0C192POS-VSR	7600-SIP-600	1-port OC-192c/STM-64 POS/RPR SPA, VSR-1	12.2(33)SXI
SPA-2XOC48POS/RPR	7600-SIP-400	2-Port OC-48 POS/RPR SPA	12.2(33)SXI
		Note Requires SFPs.	

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-1XOC48POS/RPR	7600-SIP-400	1-Port OC-48 POS/RPR SPA Note Requires SFPs .	12.2(18)SXF10
SPA-2XOC3-POS	7600-SIP-200 7600-SIP-400	2-port OC-3c/STM-1c POS SPA Note Requires SFPs .	12.2(18)SXE
SPA-4XOC3-POS	7600-SIP-200 7600-SIP-400	4-port OC-3c/STM-1c POS SPA Note Requires SFPs .	12.2(18)SXE
SPA-1XOC12-POS	7600-SIP-400	1-port OC-12c/STM-4c POS SPA Note Requires an SFP .	12.2(18)SXE

ATM SPAs



Note

- Release 12.2(33)SXH and rebuilds do not support ATM SPAs.
- With Release 12.2(33)SXI and later releases where [CSCso97991](#) is not resolved, you must configure an appropriate [burst size](#) when you configure QoS policing on WAN ports. Do not rely on the burst size calculated by QoS.

Product ID (append “=” for spares)	SIP Support	Product Description	Minimum Software Versions
SPA-1XOC12-ATM	7600-SIP-400	1-Port OC-12c/STM-4c ATM SPA Note Requires an SFP .	12.2(18)SXE
SPA-2XOC3-ATM	7600-SIP-200 7600-SIP-400	2-port OC-3c/STM-1c ATM SPA Note Requires SFPs .	12.2(18)SXE
SPA-4XOC3-ATM	7600-SIP-200 7600-SIP-400	4-port OC-3c/STM-1c ATM SPA Note Requires SFPs .	12.2(18)SXE
SPA-1XOC48-ATM	7600-SIP-400	1 port OC-48c/STM-16 ATM SPA	12.2(18)SXF

SFPs for OC3 and OC12 POS and ATM SPAs

Product ID (append “=” for spares)	Product Description
SFP-OC3-MM	OC-3/STM-1 pluggable short-reach (2 km) transceiver module, 1310-nm wavelength, MMF, LC connector
SFP-OC3-SR	OC-3/STM-1 pluggable short-reach (2 km) transceiver module, 1310-nm wavelength, LC connector
SFP-OC3-IR1	OC-3/STM-1 pluggable intermediate-reach (15 km) transceiver module, 1310-nm wavelength, LC connector
SFP-OC3-LR1	OC-3/STM-1 pluggable long-reach (40 km) transceiver module, 1310-nm wavelength, LC connector
SFP-OC3-LR2	OC-3/STM-1 pluggable long-reach (80 km) transceiver module, 1550-nm wavelength, LC connector
SFP-OC12-MM	OC-12/STM-4 pluggable short-reach (2 km) transceiver module, 1310-nm wavelength, MMF, LC connector
SFP-OC12-SR	OC-12/STM-4 pluggable short-reach (2 km) transceiver module, 1310-nm wavelength, LC connector
SFP-OC12-IR1	OC-12/STM-4 pluggable intermediate-reach (15 km) transceiver module, 1310-nm wavelength
SFP-OC12-LR1	OC-12/STM-4 pluggable long-reach (40 km) transceiver module, 1310-nm wavelength, LC connector
SFP-OC12-LR2	OC-12/STM-4 pluggable long-reach (80 km) transceiver module, 1550-nm wavelength, LC connector

Serial SPAs



Note

With Release 12.2(33)SXI and later releases where [CSCso97991](#) is not resolved, you must configure an appropriate [burst size](#) when you configure QoS policing on WAN ports. Do not rely on the burst size calculated by QoS.

Product ID (append “=” for spares)	Product Description	SIP Support	Minimum Software Versions
SPA-1xCHSTM1/OC3	1-port Channelized STM1/OC3 to DS0 SPA	7600-SIP-200	12.2(33)SXH
SPA-2XCT3/DS0	2-port Channelized T3 to DS0 SPA	7600-SIP-400	12.2(33)SXI
		7600-SIP-200	12.2(18)SXE
SPA-4XCT3/DS0	4-port Channelized T3 to DS0 SPA	7600-SIP-400	12.2(33)SXI
		7600-SIP-200	12.2(18)SXE

Product ID (append “=” for spares)	Product Description	SIP Support	Minimum Software Versions
SPA-8XCHT1/E1	8-Port Channelized T1/E1 SPA		
		7600-SIP-400	12.2(33)SXI
		7600-SIP-200	12.2(18)SXE
SPA-2XT3/E3	2-port Clear Channel T3/E3 SPA		
		7600-SIP-400	12.2(33)SXI
		7600-SIP-200	12.2(18)SXE
SPA-4XT3/E3	4-port Clear Channel T3/E3 SPA		
		7600-SIP-400	12.2(33)SXI
		7600-SIP-200	12.2(18)SXE

Services SPA Carrier (SSC) and Services SPAs



Note

If you are upgrading from a Release 12.2(18)SXF or rebuild image to a Release 12.2(33)SXH or later image, be aware of [CSCsv30090](#), “SPA-IPsec-2G VRF: vlan 1 mistakenly trunked on upgrade from SXF to SXH.”

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SSC-600 WS-IPSEC-3	Services SPA Carrier (SSC) and IPsec SPA	
	With Supervisor Engine 720-10GE in VSS mode	12.2(33)SXJ1
	With Supervisor Engine 720-10GE	12.2(33)SXI
	With Supervisor Engine 720	
	With Supervisor Engine 32	
7600-SSC-400 SPA-IPSEC-2G	Services SPA Carrier (SSC) and IPsec SPA	
	Note	
	7600-SSC-400 does not maintain state when an NSF with SSO redundancy mode switchover occurs. - See the “FPD Image Packages” section on page 7 for information about additional procedures required to support SPA-IPSEC-2G with Release 12.2(18)SXE and later releases. - SPA-IPSEC-2G does not support TACACS+ authentication for IPsec.	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXE2
	With Supervisor Engine 32	12.2(18)SXF2

Enhanced FlexWAN Module



Note

- Supported only in images that contain "_wan" in the image name.
- With Release 12.2(33)SXI and later releases where [CSCso97991](#) is not resolved, you must configure an appropriate [burst size](#) when you configure QoS policing on WAN ports. Do not rely on the burst size calculated by QoS.

Product ID (append "=" for spares)	Product Description	Minimum Software Version
WS-X6582-2PA	Enhanced FlexWAN Module; CEF256	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(17b)SXA
	With Supervisor Engine 32	12.2(18)SXF

Enhanced FlexWAN Module Port Adapters

Product ID (append "=" for spares)	Product Description	Minimum Software Versions
PA-2FE	2-port Fast Ethernet Port Adapter	12.2(18)SXE
PA-1FE	1-port Fast Ethernet Port Adapter	12.2(18)SXE
PA-POS-10C3	1-port Packet over SONET OC3c/STM1 Port Adapter	12.2(18)SXE
PA-POS-20C3	2-port POS OC3c/STM1 - SFPs for PA-POS-20C3: - SFP-OC3-MM, short range, multimode fiber - SFP-OC3-IR1, intermediate range, single-mode fiber - SFP-OC3-LR1, long range, single-mode fiber	12.2(17b)SXA
PA-POS-OC3MM PA-POS-OC3SMI PA-POS-OC3SML	Packet over SONET (OC-3)	12.2(14)SX
PA-A6-OC3MM	1-port ATM OC-3c/STM-1 multimode port adapter, enhanced	12.2(14)SX
PA-A6-OC3SMI	1-port ATM OC-3c/STM-1 single-mode (IR) port adapter, enhanced	12.2(14)SX
PA-A6-OC3SML	1-port ATM OC-3c/STM-1 single-mode (LR) port adapter, enhanced	12.2(14)SX
PA-A6-T3	1-port ATM DS3 port adapter, enhanced	12.2(14)SX

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
PA-A6-E3	1-port ATM E3 port adapter, enhanced	12.2(14)SX
PA-A3-OC3MM PA-A3-OC3SMI PA-A3-T3 PA-A3-OC3SML PA-A3-E3 PA-A3-8T1IMA PA-A3-8E1IMA	ATM with traffic shaping Note These port adapters do not support LANE when installed in the FlexWAN module.	12.2(14)SX
PA-T3 PA-T3+ PA-2T3 PA-2T3+ PA-E3 PA-2E3 PA-MC-T3 PA-MC-E3 PA-MC-2T3+	T3/E3 (clear-channel and channelized)	12.2(14)SX
PA-4T+ PA-8T-V35 PA-8T-X21 PA-8T-232 PA-MC-2E1/120 PA-MC-8T1 PA-MC-8E1/120 PA-MC-2T1 PA-MC-4T1	T1/E1	12.2(14)SX
PA-4E1G/75 PA-4E1G/120	T1/E1	12.2(17)SX
PA-MC-8TE1+	Multichannel T1/E1 8PRI Note This port adapter does not support ISDN PRI when installed in the FlexWAN module.	12.2(14)SX
PA-H PA-2H	HSSI	12.2(14)SX
PA-MC-STM-1	Multichannel STM-1	12.2(14)SX

Service Modules

- [Application Control Engine \(ACE\) Module, page 92](#)
- [Anomaly Guard Module\(AGM\), page 93](#)
- [Traffic Anomaly Detector Module \(ADM\), page 93](#)
- [ASA Services Module, page 93](#)
- [Communication Media Module \(CMM\), page 94](#)
- [Content Switching Module \(CSM\), page 95](#)
- [Content Switching Module with SSL \(CSM-S\), page 95](#)
- [Firewall Services Module \(FWSM\), page 96](#)

- [Intrusion Detection System Modules \(IDSMs\)](#), page 96
- [Network Analysis Modules \(NAMs\)](#), page 97
- [Secure Sockets Layer \(SSL\) Services Module](#), page 98
- [Wireless Services Modules](#), page 98

**Note**

- For service modules that run their own software, see the service module software release notes for information about the minimum required service module software version.
- With SPAN configured to include a port-channel interface to support a service module, be aware of [CSCth03423](#) and [CSCsx46323](#).
- EtherChannel configuration can impact some service modules. In particular, distributed EtherChannels (DECs) can interfere with service module traffic. See this field notice for more information:
<http://www.cisco.com/en/US/ts/fn/610/fn61935.html>

Application Control Engine (ACE) Module

**Note**

- ACE30-MOD-K9, ACE10-6500-K9, and ACE20-MOD-K9 run their own software—See these publications:
http://www.cisco.com/en/US/products/ps6906/tsd_products_support_model_home.html
See the module software release notes for information about the minimum required service module software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
ACE30-MOD-K9	Application Control Engine (ACE) module	
	With Supervisor Engine 720-10GE	12.2(33)SXI4
	With Supervisor Engine 720	
ACE10-6500-K9 ACE20-MOD-K9	Application Control Engine (ACE) module	
	Note With releases earlier than Release 12.2(33)SXI, not supported in virtual switch mode.	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF4

Anomaly Guard Module(AGM)



Note

- WS-SVC-AGM-1-K9 runs its own software—See these publications:
http://www.cisco.com/en/US/products/ps6236/tsd_products_support_model_home.html
- See the WS-SVC-AGM-1-K9 software release notes for information about the minimum required WS-SVC-AGM-1-K9 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-AGM-1-K9	Anomaly Guard Module (AGM)	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH1
	With Supervisor Engine 720	12.2(18)SXD3

Traffic Anomaly Detector Module (ADM)



Note

- WS-SVC-ADM-1-K9 runs its own software—See these publications:
http://www.cisco.com/en/US/products/ps6236/tsd_products_support_model_home.html
- See the WS-SVC-ADM-1-K9 software release notes for information about the minimum required WS-SVC-ADM-1-K9 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-ADM-1-K9	Traffic Anomaly Detector Module (ADM)	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH1
	With Supervisor Engine 720	12.2(18)SXD3

ASA Services Module



Note

- Supported only with 6500 E-series chassis: WS-C6513-E, WS-C6509-V-E, WS-C6509-E, WS-C6506-E, WS-C6504-E, and WS-C6503-E.
- Not supported in PFC3A mode.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-ASA-SM1-K9	ASA Services Module	
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	

Communication Media Module (CMM)



Note

- WS-SVC-CMM runs its own software—See these publications:
http://www.cisco.com/en/US/docs/interfaces_modules/services_modules/cmm/release/notes/OL_4847.html
- See the WS-SVC-CMM software release notes for information about the minimum required WS-SVC-CMM software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-CMM	Communication Media Module	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
Communication Media Module Port Adapters for WS-SVC-CMM		
WS-SVC-CMM-6E1	6-Port E1 Interface Port Adapter	
WS-SVC-CMM-6T1	6-Port T1 Interface Port Adapter	
WS-SVC-CMM-ACT	Adhoc Conferencing and Transcoding Port Adapter	
WS-SVC-CMM-24FXS	24-Port FXS Interface Port Adapter	

Content Switching Module (CSM)



Note

- WS-X6066-SLB-APC runs its own software—See these publications:
http://www.cisco.com/en/US/products/hw/modules/ps2706/ps780/tsd_products_support_model_home.html
- See the WS-X6066-SLB-APC software release notes for information about the minimum required WS-X6066-SLB-APC software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6066-SLB-APC	Content Switching Module (CSM)	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXI2 (Not supported in
	With Supervisor Engine 720	Release 12.2(33)SXJ and rebuilds)

Content Switching Module with SSL (CSM-S)



Note

- WS-X6066-SLB-S-K9 runs its own software—See these publications:
http://www.cisco.com/en/US/products/hw/modules/ps2706/ps780/tsd_products_support_model_home.html
- See the WS-X6066-SLB-S-K9 software release notes for information about the minimum required WS-X6066-SLB-S-K9 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-X6066-SLB-S-K9	Content Switching Module with SSL (CSM-S)	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXI2 (Not supported in
	With Supervisor Engine 720	Release 12.2(33)SXJ and rebuilds)

Firewall Services Module (FWSM)



Note

- With Firewall Services Module Software Release 2.3(1) and later releases, WS-SVC-FWM-1-K9 maintains state when an [NSF with SSO](#) redundancy mode switchover occurs.
- The FWSM runs its own software—See these publications:
http://www.cisco.com/en/US/products/hw/modules/ps2706/ps4452/tsd_products_support_model_home.html

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-FWM-1-K9	Firewall Services Module; CEF256	
	With Supervisor Engine 720-10GE in VSS mode	12.2(33)SXI
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX1
	With Supervisor Engine 32	12.2(18)SXF

Intrusion Detection System Modules (IDSMS)



Note

- The IDSM runs its own software—See these publications:
http://www.cisco.com/en/US/products/hw/modules/ps2706/ps5058/tsd_products_support_model_home.html

See the IDSM software release notes for information about the minimum required IDSM software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-IDSM2-K9	Intrusion Detection System Module 2; CEF256	
	With Supervisor Engine 720-10GE in VSS mode	12.2(33)SXI
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX1
	With Supervisor Engine 32	12.2(18)SXF

Network Analysis Modules (NAMs)



Note

- Network Analysis Modules run their own software—See this publication for more information: http://www.cisco.com/en/US/products/sw/cscowork/ps5401/prod_release_notes_list.html
- See the NAM software release notes for information about the minimum required NAM software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-NAM3-6G-K9	Network Analysis Module 3	
	With Supervisor Engine 720-10GE	12.2(33)SXJ1
	With Supervisor Engine 720	
	- Supported only with 6500 E-series chassis: WS-C6513-E, WS-C6509-V-E, WS-C6509-E, WS-C6506-E, WS-C6504-E, and WS-C6503-E. - Not supported in PFC3A mode.	
WS-SVC-NAM-2 WS-SVC-NAM-1	Network Analysis Module 2	
	Network Analysis Module 1	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX1
	With Supervisor Engine 32	12.2(18)SXF

Secure Sockets Layer (SSL) Services Module


Note

- Supported in virtual switch mode.
- WS-SVC-SSL-1 does not maintain state when an NSF with SSO redundancy mode switchover occurs.
- WS-SVC-SSL-1 runs its own software—See the publications listed here for more information:
http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html
- See the WS-SVC-SSL-1 software release notes for information about the minimum required WS-SVC-SSL-1 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-SSL-1	Secure Sockets Layer (SSL) Services Module	
	With Supervisor Engine 720-10GE	12.2(33)SX14
	With Supervisor Engine 720	12.2(33)SX14a or later recommended - Not supported in Release 12.2(33)SXJ and rebuilds
	With Supervisor Engine 32	

Wireless Services Modules

- [Wireless Services Module 2 \(WiSM2\), page 99](#)
- [Wireless Services Module \(WiSM\), page 99](#)

Wireless Services Module 2 (WiSM2)



Note

- Supervisor Engine 32 does not support WS-SVC-WISM2-K9.
- In a [13-slot chassis](#), WS-SVC-WISM2-K9 is supported only in slots 9 through 13 and does not power up in other slots.
- WS-SVC-WISM2-K9 runs its own software—See these publications:
http://www.cisco.com/en/US/products/ps10315/prod_release_notes_list.html
- See the WS-SVC-WISM2-K9 software release notes for information about the minimum required WS-SVC-WISM-1-K9 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-WISM2-K9	Wireless Services Module 2 (WiSM2)	
	With Supervisor Engine 720-10GE	12.2(33)SXJ
	With Supervisor Engine 720	

Wireless Services Module (WiSM)



Note

- With releases earlier than Release 12.2(33)SXI, not supported in virtual switch mode.
- In a [13-slot chassis](#), WS-SVC-WISM-1-K9 is supported only in slots 9 through 13 and does not power up in other slots.
- WS-SVC-WISM-1-K9 runs its own software—See these publications:
http://www.cisco.com/en/US/products/ps6526/tsd_products_support_eol_model_home.html
- See the WS-SVC-WISM-1-K9 software release notes for information about the minimum required WS-SVC-WISM-1-K9 software version.

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-SVC-WISM-1-K9	Wireless Services Module (WiSM)	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF2

Fan Trays


Note

Enter the **show environment status | include fan** command or the **show environment cooling** command to display information about the installed fan trays.

Product ID (append “=” for spares)	Product Description	Minimum Software Version
FAN-MOD-3HS	High-capacity fan tray for WS-C6503 and CISCO7603 chassis	12.2(14)SX
FAN-MOD-6HS	High-capacity fan tray for CISCO7606 chassis	12.2(14)SX
WS-C6K-6SLOT-FAN2	High-capacity fan tray for WS-C6506 chassis	12.2(14)SX
FAN-MOD-09	High-capacity fan tray for WS-C6509-NEB-A and CISCO7609 chassis	12.2(14)SX
WS-C6K-9SLOT-FAN2	High-capacity fan tray for WS-C6509 chassis	12.2(14)SX
WS-C6K-13SLT-FAN2	High-capacity fan tray for WS-C6513 and CISCO7613 chassis	12.2(14)SX

Power Supplies

- [CISCO7606 Power Supplies, page 100](#)
- [WS-C6504-E and CISCO7604 Power Supplies, page 101](#)
- [WS-C6503, WS-C6503-E, and CISCO7603 Power Supplies, page 101](#)
- [All Other Power Supplies, page 101](#)

CISCO7606 Power Supplies

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
PWR-2700-AC	2700 W AC power supply	12.2(18)SXE
PWR-2700-DC	2700 W DC power supply	12.2(18)SXE

WS-C6504-E and CISC07604 Power Supplies

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
PWR-2700-AC/4	2700 W AC power supply	12.2(18)SXE
PWR-2700-DC/4	2700 W DC power supply	12.2(18)SXE

WS-C6503, WS-C6503-E, and CISC07603 Power Supplies

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
PWR-1400-AC	1,400 W AC power supply	12.2(17a)SX
PWR-950-AC	950 W AC power supply	12.2(14)SX
PWR-950-DC	950 W DC power supply	12.2(14)SX

All Other Power Supplies



Note

The power supplies in this section are not supported in these chassis:

- Catalyst 6503
- Catalyst 6503-E
- CISC07603
- Catalyst 6504-E
- CISC07604

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-CAC-8700W-E	8,700 W AC power supply	12.2(18)SXF8
	Note - Limited to 4,500 W in the WS-C6509-NEB-A chassis. - Limited to 4,000 W in these chassis: - WS-C6509 - WS-C6506 - WS-C6509-NEB - WS-CAC-8700W-E supports a remote power cycling feature. - See this publication for more information: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Chassis_Installation/Cat6500/6500_ins.html	
PWR-6000-DC	6,000 W DC power supply	12.2(18)SXF13 12.2(33)SXH2
	Note - Limited to 4,500 W in the WS-C6509-NEB-A chassis. - Limited to 4,000 W in these chassis: - WS-C6509 - WS-C6506 - WS-C6509-NEB	
WS-CAC-6000W	6,000 W AC power supply	12.2(18)SXD
	Note - Limited to 4,500 W in the WS-C6509-NEB-A chassis. - Limited to 4,000 W in these chassis: - WS-C6509 - WS-C6506 - WS-C6509-NEB	

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
PWR-4000-DC	4,000 W DC power supply	12.2(14)SX
WS-CAC-4000W	4,000 W AC power supply	12.2(14)SX
+WS-CAC-3000W	3,000 W AC power supply	12.2(17a)SX
	Note - Required with Supervisor Engine 720 or Supervisor Engine 720-10GE in WS-C6509-NEB or OSR7609. - Included in the WS-6509-NEB-UPGRD= upgrade kit.	
WS-CAC-3000W	3,000 W AC power supply	12.2(14)SX
WS-CAC-2500W	2,500 W AC power supply	12.2(14)SX
WS-CDC-2500W	2,500 W DC power supply	12.2(14)SX

Chassis

- [13-Slot Chassis, page 104](#)
- [9-Slot Chassis, page 105](#)
- [6-Slot Chassis, page 108](#)
- [4-Slot Chassis, page 109](#)
- [3-Slot Chassis, page 109](#)

13-Slot Chassis

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6513-E	Catalyst 6513-E chassis: • 13 slots • 64 chassis MAC addresses • These modules are supported only in slots 9 through 13 and do not power up in other slots: – WS-X6700 series switching modules except WS-X6724-SFP – WS-X6816-GBIC switching modules – WS-SVC-WISM-1-K9	
	With Supervisor Engine 720-10GE	12.2(33)SXI1 12.2(33)SXH2
	With Supervisor Engine 720	12.2(33)SXI1 12.2(33)SXH2 12.2(18)SXF14
	With Supervisor Engine 32	12.2(33)SXI1 12.2(33)SXH2 12.2(18)SXF14
WS-C6513	Catalyst 6513 chassis: • 13 slots • 64 chassis MAC addresses • Use with Supervisor Engine 720-10GE or Supervisor Engine 720 requires WS-C6K-13SLT-FAN2 • These modules are supported only in slots 9 through 13 and do not power up in other slots: – WS-X6700 series switching modules except WS-X6724-SFP – WS-X6816-GBIC switching modules – WS-SVC-WISM-1-K9	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
CISCO7613	Cisco 7613 chassis: 13 slots 64 chassis MAC addresses - Use with Supervisor Engine 720-10GE or Supervisor Engine 720 requires WS-C6K-13SLT-FAN2 - These modules are supported only in slots 9 through 13 and do not power up in other slots: - WS-X6700 series switching modules - WS-X6816-GBIC switching modules - WS-SVC-WISM-1-K9	
	With Supervisor Engine 720-10GE (not supported in VSS mode).	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

9-Slot Chassis

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6509-V-E	Catalyst 6509-V-E chassis: 9 vertical slots 64 chassis MAC addresses - Required power supply: 2,500 W DC or higher 3,000 W AC or higher	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXF10
	With Supervisor Engine 32	12.2(18)SXF10

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6509-E	Catalyst 6509-E chassis: 9 horizontal slots - Chassis MAC addresses: - Before April 2009—1024 chassis MAC addresses - Starting in April 2009—64 chassis MAC addresses Note Chassis with 64 MAC addresses automatically enable the Extended System ID feature, which is enabled with the spanning-tree extend system-id command. You cannot disable the extended-system ID in chassis that support 64 MAC addresses. The Extended System ID feature might already be enabled in your network, because it is required to support both extended-range VLANs and any chassis with 64 MAC addresses. Enabling the extended system ID feature for the first time updates the bridge IDs of all active STP instances, which might change the spanning tree topology. - Requires 2,500 W or higher power supply - With releases earlier than Release 12.2(18)SXD, WS-CAC-6000W is limited to 4,000 W in WS-C6509-E	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
WS-C6509	Catalyst 6509 chassis: 9 horizontal slots 1024 chassis MAC addresses - Use with Supervisor Engine 720-10GE, Supervisor Engine 720, or Supervisor Engine 32 requires WS-C6K-9SLOT-FAN2 WS-CAC-6000W is limited to 4,000 W in WS-C6509	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
WS-C6509-NEB-A	Catalyst 6509-NEB chassis 9 vertical slots 64 chassis MAC addresses - Supports two FAN-MOD-09 modules. - Two FAN-MOD-09 modules required with WS-X6716-10G or WS-X6708-10GE.	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6509-NEB	Catalyst 6509-NEB chassis: 9 vertical slots 1024 chassis MAC addresses - Requires the WS-6509-NEB-UPGRD= upgrade kit—refer to this publication: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16162.html - Does not support WS-X6716-10T-3C or WS-X6716-10T-3CXL.	
	With Supervisor Engine 720	12.2(17a)SX
	With Supervisor Engine 32	12.2(18)SXF
CISCO7609	Cisco 7609 chassis 9 vertical slots 64 chassis MAC addresses	
	With Supervisor Engine 720-10GE (Not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
OSR-7609	Cisco 7609 chassis: 9 vertical slots 1024 chassis MAC addresses - Requires the WS-6509-NEB-UPGRD= upgrade kit—refer to this publication: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16162.html	
	With Supervisor Engine 720	12.2(17a)SX
	With Supervisor Engine 32	12.2(18)SXF

6-Slot Chassis

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6506-E	Catalyst 6506 chassis: 6 slots - Chassis MAC addresses: - Before April 2009—1024 chassis MAC addresses - Starting in April 2009—64 chassis MAC addresses Note Chassis with 64 MAC addresses automatically enable the Extended System ID feature, which is enabled with the spanning-tree extend system-id command. You cannot disable the extended-system ID in chassis that support 64 MAC addresses. The Extended System ID feature might already be enabled in your network, because it is required to support both extended-range VLANs and any chassis with 64 MAC addresses. Enabling the extended system ID feature for the first time updates the bridge IDs of all active STP instances, which might change the spanning tree topology. - Requires 2,500 W or higher power supply	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
WS-C6506	Catalyst 6506 chassis: 6 slots 1024 chassis MAC addresses - Requires WS-C6K-6SLOT-FAN2 WS-CAC-6000W limited to 4,000 W in WS-C6506	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
CISC07606	Cisco 7606 chassis: 6 slots 64 chassis MAC addresses - Requires FAN-MOD-6HS	
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

4-Slot Chassis

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6504-E	Catalyst 6504-E chassis: 4 slots 64 chassis MAC addresses	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(18)SXE
	With Supervisor Engine 32	12.2(18)SXF
CISCO7604	Cisco 7604 chassis: 4 slots 64 chassis MAC addresses	
	With Supervisor Engine 720-10GE (not supported in VSS mode)	12.2(33)SXH
	With Supervisor Engine 720:	12.2(18)SXE
	With Supervisor Engine 32	12.2(18)SXF

3-Slot Chassis

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
WS-C6503-E	3 slots 64 chassis MAC addresses	
	With Supervisor Engine 720-10GE	12.2(33)SXH
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF
WS-C6503	Catalyst 6503 chassis: 3 slots 64 chassis MAC addresses - Requires FAN-MOD-3HS - Does not support: - WS-X6700 series switching modules - WS-X6816-GBIC switching modules - Supervisor Engine 720-10GE	
	With Supervisor Engine 720	12.2(14)SX
	With Supervisor Engine 32	12.2(18)SXF

Product ID (append “=” for spares)	Product Description	Minimum Software Versions
CISC07603	Cisco 7603 chassis: • 3 slots • 64 chassis MAC addresses • Use with Supervisor Engine 720-10GE or Supervisor Engine 720 requires FAN-MOD-3HS • Does not support: – WS-X6700 series switching modules – WS-X6816-GBIC switching modules – Supervisor Engine 720-10GE – Supervisor Engine 32	
	With Supervisor Engine 720	12.2(14)SX

Cisco ME 6500 Series Ethernet Switches (ME6524)

- [Cisco ME 6500 Series Ethernet Switches Restrictions, page 110](#)
- [Cisco ME 6500 Series Ethernet Switches Features, page 111](#)

Cisco ME 6500 Series Ethernet Switches Restrictions

Cisco ME 6500 Series Ethernet switches cannot support these software features and commands:

- Cisco ME 6500 Series Ethernet switches are not supported in Release 12.2(33)SXJ and later releases. Support continues in Release 12.2(33)SXI and rebuilds.
- Egress multicast replication
- Multicast replication mode detection
- Fabric configuration commands
- RPR and SSO redundancy
- VLAN translation

Cisco ME 6500 Series Ethernet Switches Features

Product ID (append “=” for spares)	Product Description	Minimum Software Version
ME-C6524GS-8S ME-C6524GT-8S	Cisco ME 6500 Series Ethernet switches: - Switch processor (SP): - For Cisco IOS images, 256-MB DRAM (some images require more DRAM) - For Cisco IOS modularity images, with releases earlier than Release 12.2(33)SXH3, 256-MB DRAM (some images require more DRAM) - For Cisco IOS modularity images, with Release 12.2(33)SXH3 and later releases, 512-MB DRAM required (some images require more DRAM) 128-MB bootflash (sup-bootflash:; from ROMMON, it is bootflash:) - Route processor (RP)—Multilayer Switch Feature Card 2A (MSFC2A): 512-MB DRAM (some images require more DRAM) 64-MB bootflash (bootflash:) - Policy Feature Card 3C (PFC3C) - See the “Policy Feature Cards” section on page 24 - ME 6500 switches always operate in PFC3C mode. Enter the show platform hardware pfc mode command to display the PFC3 mode. - Fan tray: FAN-C6524 - Power supplies (can be used together): - PWR-400W-DC - PWR-400W-AC 64 chassis MAC addresses - One external CompactFlash Type II slot (disk0:; supports CompactFlash Type II Flash PC cards sold by Cisco Systems, Inc., for use in Cisco ME 6500 Series Ethernet switches) - Eight SFP ports: - Requires Small Form-Factor Pluggable (SFP) Modules 1 port group: ports 25–32 - QoS port architecture (Rx/Tx): 2q8t/1p3q8t - ME-C6524GS-8S: 24 SFP ports (requires Small Form-Factor Pluggable (SFP) Modules) 4 port groups: ports 1–6, 7–12, 13–18, 19–24 - QoS port architecture (Rx/Tx): 1q2t/1p3q8t - ME-C6524GT-8S: 24 10/100/1000 Mbps RJ-45 Ethernet ports 4 port groups: ports 1–6, 7–12, 13–18, 19–24 - QoS port architecture (Rx/Tx): 1q2t/1p3q8t	12.2(33)SXH

Note See this publication for Cisco ME 6500 Series Ethernet switch hardware information:

http://www.cisco.com/en/US/products/ps6845/tsd_products_support_eol_series_home.html

Unsupported Hardware



Note

- See the “[Supervisor Engine 32 \(CAT6000-SUP32/MSFC2A\)](#)” section on page 22 for information about hardware that is not supported with the Supervisor Engine 32.
- See the *Release Notes for Cisco IOS Release 12.2SXF and Rebuilds* publication for information about support in earlier releases:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SXF/native/release/notes/OL_4164.html

Release 12.2(33)SXH and later releases do not support the following hardware:

- Supervisor Engine 1 (WS-X6K-S1A-MSFC2, WS-X6K-SUP1A-MSFC)
- Supervisor Engine 2 (WS-X6K-S2U-MSFC2, WS-X6K-S2-MSFC2)
- WS-F6K-DFC distributed forwarding card (DFC)
- Optical Services Modules (OSMs)
- These service modules:
 - WS-X6381-IDS Intrusion Detection System (IDS) Module (WS-SVC-IDSM2-K9 is supported)
 - WS-X6380-NAM Network Analysis Module (NAM; WS-SVC-NAM-2 and WS-SVC-NAM-1 are supported)
 - WS-SVC-AON-1-K9 Application-Oriented Networking (AON) Module
 - WS-SVC-CSG-1 Content Services Gateway (CSG) Module
 - WS-SVC-IPSEC-1 IPsec VPN Acceleration Services Module
 - WS-SVC-MWAM-1 Multi-Processor WAN Application Module
 - WS-SVC-PSD-1 Persistent Storage Device Module
 - WS-SVC-WEBVPN-K9 WebVPN Services Module
 - WS-SVC-WLAN-1-K9 Wireless LAN service module
- Release 12.2(33)SXI and rebuilds support the 7600-SIP-600. Release 12.2(33)SXH and rebuilds do not support the 7600-SIP-600 and these SPAs:
 - SPA-10X1GE 10-port Gigabit Ethernet SPA, SFP Optics
 - SPA-5X1GE 5-port Gigabit Ethernet SPA, SFP Optics
 - SPA-1XTENGE-XFP 1-port 10-Gigabit Ethernet SPA, LANPHY XFP Optics
 - SPA-OC192POS-VSR 1-port OC-192c/STM-64 POS/RPR SPA, VSR-1
 - SPA-OC192POS-LR 1-port OC-192c/STM-64 POS/RPR SPA, SM-LR
 - SPA-OC192POS-XFP 1-port OC-192c/STM-64 POS/RPR SPA, XFP Optics
 - SPA-OC192POS-VSR 1-port OC-192c/STM-64 POS/RPR SPA, VSR-1
- WS-X6182-2PA FlexWAN Module
- These Ethernet Switching Modules:
 - WS-X6024-10FL-MT 24-port 10BASE-FL MT-RJ
 - WS-X6248A-TEL 48-port 10/100TX RJ-21

- WS-X6248-RJ-45 48-port 10/100TX RJ-45
- WS-X6248-TEL 48-port 10/100TX RJ-21
- WS-X6324-100FX-SM 24-port 100FX Ethernet
- WS-X6224-100FX-MT 24-port 100FX Ethernet Multimode MT-RJ
- WS-X6316-GE-TX 16-port Gigabit Ethernet RJ-45
- WS-X6416-GE-MT 16-Port Gigabit Ethernet MT-RJ
- WS-CAC-1000W power supply
- WS-CAC-1300W power supply
- WS-CDC-1300W power supply
- These fan trays:
 - FAN-MOD-3
 - FAN-MOD-6
 - WS-C6K-6SLOT-FAN
 - WS-C6509-NEB-FAN
 - WS-C6K-9SLOT-FAN
 - WS-C6K-13SLT-FAN
- With a Supervisor Engine 720, [WS-X6516-GBIC](#) hardware revisions 5.0 through 5.4 with a DFC3 installed.

Supervisor Engine 720 supports a DFC3 on these [WS-X6516-GBIC](#) hardware revisions:

- Lower than 5.0
- 5.5 and higher

With a Supervisor Engine 720 and a DFC3 installed, [WS-X6516-GBIC](#) hardware revisions 5.0 through 5.3 do not power up. Without a DFC3, [WS-X6516-GBIC](#) hardware revisions 5.0 through 5.4 operate in bus mode.

See external field notice 24494 for more information:

<http://www.cisco.com/en/US/ts/fn/200/fn24494.html>

- WS-X6624-FXS, WS-X6608-T1, and WS-X6608-E1 voice modules
- WS-X6101-OC12-MMF and WS-X6101-OC12-SMF ATM LANE modules
- WS-X6302-MSM Multilayer Switch Module
- Catalyst 6000 series chassis

Unsupported modules remain powered down if detected and do not affect system behavior.

